

## SUPPLEMENT.

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2238.—Vol. XLVIII.

LONDON, SATURDAY, JULY 13, 1878.

PRICE (WITH THE JOURNAL) SIXPENCE.  
PER ANNUM, BY POST, £1 4s.

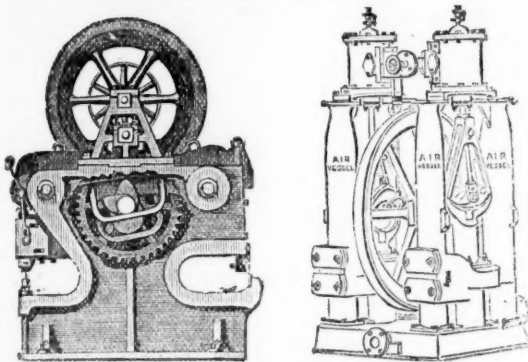
JOHN CAMERON'S

SPECIALITIES ARE ALL SIZES OF

Steam Pumps, Shipbuilders' Tools,

BAR SHEARS.

ESTABLISHED 1852.

OLDFIELD ROAD IRON WORKS,  
SALFORD, MANCHESTER.For Excellence  
and Practical Success  
of EnginesRepresented by  
Model exhibited by  
this Firm.

HARVEY AND CO.

ENGINEERS AND GENERAL MERCHANTS,

HAYLE, CORNWALL,

LONDON OFFICE,—186, GRESHAM HOUSE, E.C.

MANUFACTURERS OF

PUMPING and other LAND ENGINES and MARINE STEAM ENGINES  
of the largest and most approved kinds in use, SUGAR MACHINERY,  
MILLWORK, MINING MACHINERY, AND MACHINERY IN GE-  
NERAL. SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF

HUSBAND'S PATENT PNEUMATIC STAMPS.

SECONDHAND MINING MACHINERY FOR SALE.

In Good Condition, at Moderate Prices—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;  
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of  
various sizes and descriptions; and all kinds of MATERIALS required for  
MINING PURPOSES.THE  
PHOSPHOR BRONZE  
COMPANY (LIMITED).139, CANNON STREET, E. C.  
LONDON.

Alloy, No. II., for pinions, ornamental castings, steam  
fittings, &c. £12 per ton  
" No. IV., for pinions, pumps, valves, linings,  
cylinders, &c. 130  
" No. VI. (must be cast in chill) for bolts, &c.  
This alloy has very great tensile strength. 140  
" No. VII., for hydraulic pumps, valves, and  
plungers, piston rings, bushes and bearings,  
for steel shafts. 140  
" No. XI., special phosphor-bronze bearing metal,  
wearing five times as long as gun metal. 112

The prices of castings vary according to the pattern, the quantity required, and  
the alloy used.

WIRE ROPES, TUBES OF ALL DESCRIPTIONS, &amp;c.

STANDARD LUBRICATING OILS  
COMPANY, LIMITED.DARK and FALE OILS for MACHINERY, RAILWAY, and MINING  
PURPOSES, from TWO SHILLINGS per gallon, and upwards.

AGENTS WANTED.

1, DRAPERS' GARDENS, THROMORTON AVENUE,  
LONDON, E.C.

ALEX. CHAPLIN AND CO.,

CRANSTONHILL ENGINE WORKS, GLASGOW.

PATENTERS and SOLE MANUFACTURERS OF

CHAPLINS' PATENT STEAM CRANES, HOISTS,  
LOCOMOTIVES, AND OTHER ENGINES AND BOILERS.

LONDON HOUSE:—

MCKENDRICK, BALL, AND CO.,

63, QUEEN VICTORIA STREET, LONDON, E.C.

PARIS,  
BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH,  
SILVER MEDAL, 1867A DIPLOMA—HIGHEST OF ALL AWARDS—given by the  
Geographical Congress, Paris, 1875—M. Favre, Contractor, having  
exhibited the McKean Drill alone as the MODEL BORING MACHINE  
for the St. Gothard Tunnel.SILVER MEDAL of the Highland and West of Scotland  
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

## THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-  
tive weeks, ending February 7, was 24-90, 27-60, 24-80, 26-10,  
28-30, 27-10, 28-40, 28-70 metres. Total advance of south head-  
ing during January was 121-30 metres, or 133 yards.In a series of comparative trials made at the St. Gothard Tun-  
nel, the McKean Rock Drill continued to work until the pres-  
sure was reduced to one-half atmosphere (7½ lbs.), showing  
almost the entire motive force to be available for the blow  
against the rock—a result of itself indicating many advantages.The GREAT WESTERN RAILWAY has adopted these  
Machines for the SEVERN TUNNEL; the LONDON AND  
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-  
NEL; and the BRITISH GOVERNMENT for several Public  
Works. A considerable number of Mining Companies are now  
using them. Shafts and Galleries are driven at from three to  
six times the speed of hand labour, according to the size and  
number of machines employed, and with important saving in  
cost. The ratio of advantage over hand labour is greatest  
where the rock is hardest.These Machines possess many advantages, which give them  
a value unapproached by any other system of Boring Machine.THE MCKEAN ROCK DRILL IS ATTAINING GENERAL  
USE THROUGHOUT THE WORLD FOR MINING, TUN-  
NELLING, QUARRYING, AND SUB-MARINE BORING.The MCKEAN ROCK DRILLS are the most powerful—the  
most portable—the most durable—the most compact—of the  
best mechanical device. They contain the fewest parts—have  
no weak parts—act without shock upon any of the operating  
parts—work with a lower pressure than any other Rock  
Drill—may be worked at a higher pressure than any other  
—may be run with safety to FIFTEEN HUNDRED STROKES  
PER MINUTE—do not require a mechanic to work them—are  
the smallest, shortest, and lightest of all machines—will give  
the longest feed without change of tool—work with long or  
short stroke at pleasure of operator.The SAME Machine may be used for sinking, drifting, or  
open work. Their working parts are best protected against  
grit and accidents. The various methods of mounting them  
are the most efficient.N.B.—Correspondents should state particulars as to  
character of work in hand in writing us for information,  
on receipt of which a special definite answer, with  
reference to our full illustrated catalogue, will be sent.PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,  
IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

MCKEAN AND CO.

ENGINEERS.

OFFICES,

5, RUE SCRIBE, PARIS

MANUFACTURED FOR MCKEAN AND CO. BY  
MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS,"  
GLASGOW.

## SOLID DRAWN BRASS BOILER TUBES

FOR LOCOMOTIVE AND MARINE BOILERS

EITHER

MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),

FRENCH WALLS,

NEAR BIRMINGHAM.

## DUNN'S ROCK DRILL.

AND

AIR COMPRESSORS.

FOR DRIVING BED ROCK

TUNNELS, SINKING

SHAFTS, AND PERFORMING

OPEN FIELD OPERATIONS,

IS THE

CHEAPEST, SIMPLEST,

STRONGEST, &amp; MOST EFFECTIVE

DRILL IN THE WORLD.

Dunn's Patent Rock Drill Company

(LIMITED).

OFFICE,—193, GOSWELL ROAD  
LONDON, E.C.

THE

PATENT SELF-ACTING MINERAL  
DRESSING MACHINE COMPANY

(LIMITED).

T. CURRIE GREGORY, C.E., F.G.S.

OFFICES,—GLASGOW: 4, WEST REGENT STREET.

LONDON: 52, QUEEN VICTORIA STREET, E.C.

IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWTH,  
SUPPLIES MACHINES under the above Company's Patents for  
DRESSING all METALLIC ORES. Dressing-floors having these Machines pos-  
sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED  
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND  
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN  
FOR MARKET AT ONE OPERATION.

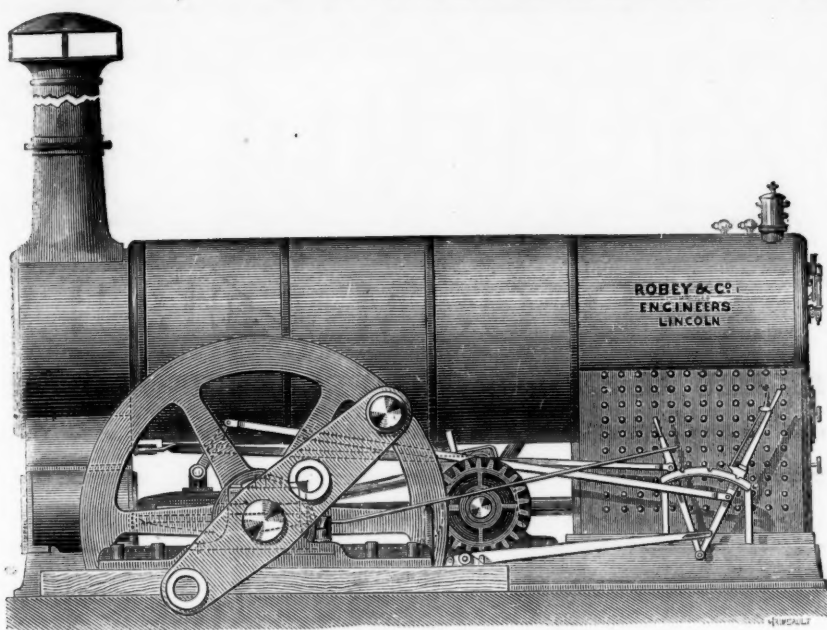
They have been supplied to some of the principal mines in the United Kingdom  
and abroad—viz.,The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines,  
Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside  
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the  
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esquair-  
mwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,  
Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Brats-  
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of  
America, and Australia, from all of whom certificates of the complete efficiency of  
the system can be had.WASTE HEAPS, consisting of refuse chate and skimpings of a  
former washing, containing a mixture of lead, blende, and sulphur,  
DRESSED TO A PROFIT.Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-  
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly  
profit on our Nanthead waste heaps amounted last year to £2600, besides the ma-  
chinery being occupied for some months in dressing ore-stuff from the mines. Of  
course, if it had been wholly engaged in dressing wastes our returns would have  
been greater; but it is giving us every satisfaction, and bringing the waste heaps  
into profitable use, which would otherwise remain dormant."Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,  
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much  
pleasure in stating that a full and superior set of your Ore Dressing Machinery has  
been at work at these mines for fully a month, and each day as the moving parts  
become smoother, and those in charge understand the working of the machinery  
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,  
and satisfactorily than by any other method."Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,  
says—"Your machinery saves fully one-half on old wages, and vastly more on the  
wages we have now to pay. Over and above the saving in cost is the saving in ore,  
which is a great much short of 10 per cent."GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The  
separation which they make is complete."Mr. MONTAGUE BEALE says—"It will separate ore, however close  
the mechanical mixture, in such a way as no other machines can do."Mr. C. DODSWORTH says—"It is the very best for the purpose,  
and will do for any kind of metallic ores—the very thing so long needed for dress-  
ing-floors."Drawings, specifications, and estimates will be forwarded on application to—  
GEORGE GREEN, M.E., ABERYSTWTH, SOUTH WALES.



# ROBEY & CO., ENGINEERS, LINCOLN.

No Expensive  
Buildings, or  
High Chimney  
required.

Engines up to  
200 effective  
horse-power  
always in  
progress.



## SOLE MANUFACTURERS OF The Patent Improved Robey Mining Engine.

Some of the advantages of this Engine are—

SMALL FIRST COST; SAVING OF TIME AND EXPENSE IN FIXING; EASE,  
SAFETY, AND ECONOMY IN WORKING; GREAT SAVING IN FUEL.

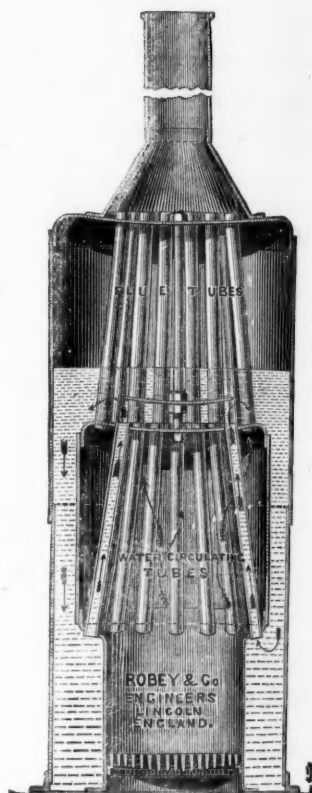
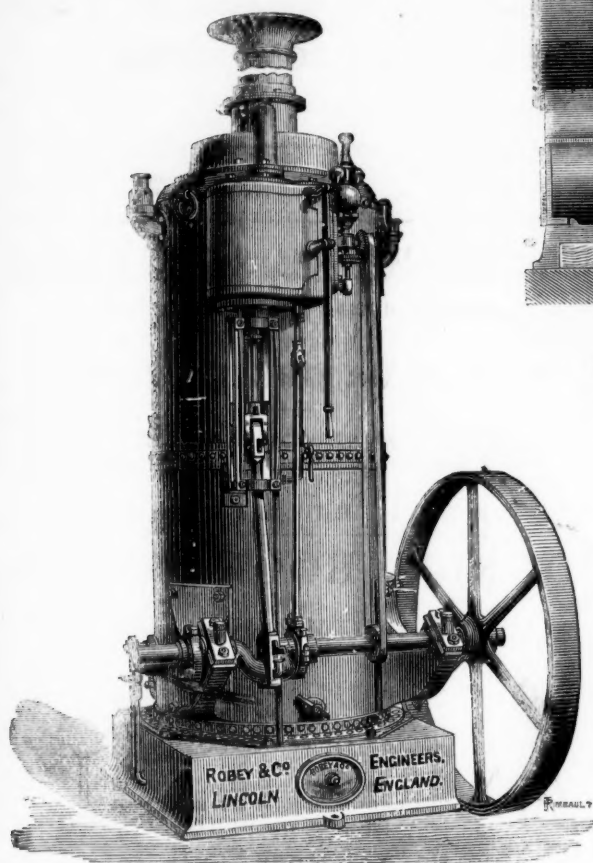
LIKEWISE,

## SOLE MANUFACTURERS OF Improved Vertical Steam Engines and Patent Boilers combined.

The Illustrations show one of Robey and Co.'s Improved Vertical Engines. All these Engines are supplied with R. and Co.'s New Patent Boiler, as per section illustrated, which has, among others, the following advantages over all Vertical Boilers yet introduced:—  
PERFECT CIRCULATION OF THE WATER; SEPARATION OF THE SEDIMENT;  
GREAT DURABILITY; GREAT ECONOMY IN FUEL.

For photographs, prices, and full particulars, apply to the

SOLE MANUFACTURERS,  
ROBEY & CO., LINCOLN, ENGLAND.



## MECHANICAL VENTILATION OF MINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.) undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialties are: The absence of necessity for costly erections in masonry and brickwork; the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on

Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect. (Estimates and further information will be prepared on receipt of the necessary particulars).

FOR SINKING PURPOSES, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

NOISELESS BLOWING FANS, for Smithy Fires, and other purposes.

TURBINE WATER-WHEELS, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),  
PNEUMATIC AND HYDRAULIC ENGINEERS,  
(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),  
2, CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.

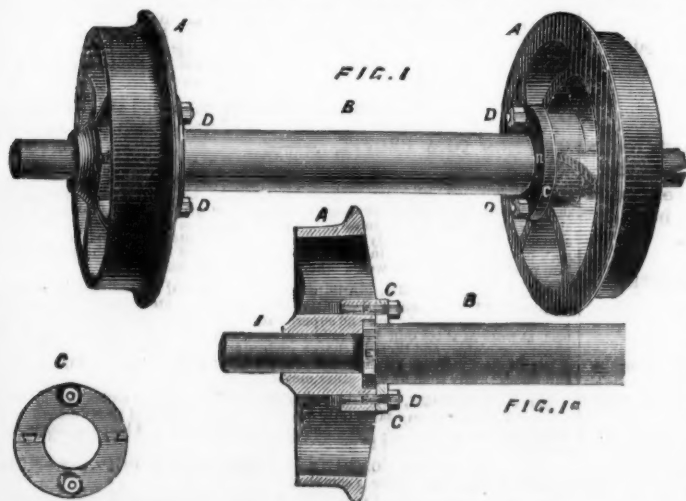
## JOSEPH FENTON & SONS,

MANUFACTURERS OF  
CAST STEEL AND FILES,  
AND

CRUCIBLE CAST STEEL CASTINGS,

Sykes Works, Eyre-st. & Bridge-st., Sheffield. London Office: 118, Cannon-st., E.C.

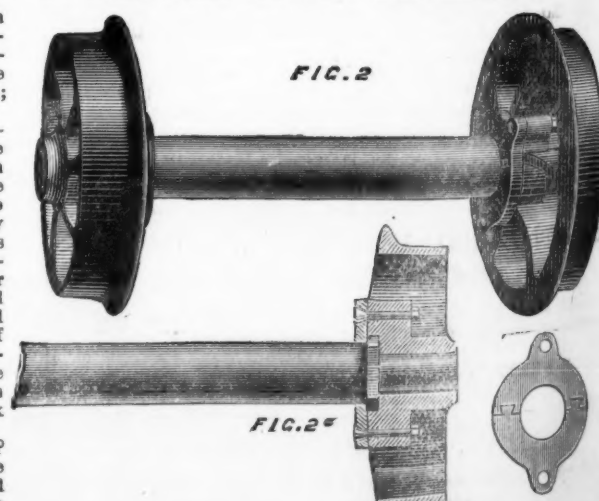
A New Patent Method of Fitting up Wheels and Axles.



Figs. 1 and 1a show a longitudinal view and plan of a pair of cast wheels and axles fitted up for outside bearings, and Figs. 2 and 2a for inside bearings. A A are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle, which is forged of solid steel; the axle is secured into the recess partly by being sufficiently tightly fitted to require driving home with a hammer, and partly by the washer. Around the axle adjoining the boss is fixed the washer, made in two parts and dovetailed, so as to allow of being fixed after the collar has been forged on the axle. The washer is secured to the boss by bolts and nuts, both in outside and inside bearings; in the case of inside, by means of lugs cast on the boss, and the washer made of corresponding shape; the washer is made of crucible cast steel. The only tool required for fitting is an ordinary spanner for outside bearings, and a box spanner for inside bearings.

Now what are the advantages of this method? You secure a simple way of fitting—it can be done by anyone who has seen it—the only tool required being a spanner; the wheels can be detached from or secured to the axle in a few minutes. The next



advantage is the perfect solidity attained, the wheel and axle, practically becoming as one piece. The durability results from the toughness of the material, and the solidity secured in the fitting. Another thing, is the wheels do not need to be put in the fire to detach them, as is the case in ordinary wheels. (N.B.—Our wheels cannot be injured by being heated and plunged into cold water, which would render other steel wheels perfectly brittle as glass.) Saving in fuel and wages is evident—no skilled labour being required to refit wheels in case of a strained axle. By adopting this system colliery owners may save hundreds of pounds sterling yearly.



## Original Correspondence.

## THE SULPHUR AND COPPER MINES OF SPAIN AND PORTUGAL, AND THE EXTRACTION OF COPPER FROM POOR COPPER ORE.

SIR,—During the last 25 or 30 years larger quantities of pyrites have been used in the manufacture of sulphuric acid, which formerly could not be employed for want of proper arrangements at the chemical, and also the expensiveness of their transport. Among them are the sulphur ores from the Irish mines, since 1838; from Ysteroen and Vog-naes Mines in Norway, from the Tharsis, La Zarza, and Rio Tinto Mines in Spain, and from the San Domingo Mine in Portugal. When the use of pyrites was first introduced all sulphur ores could be employed, irrespective of their contents of copper, but after a lapse of only a few years increasing competition and low prices of the acid have caused a considerable decline, so that it was only profitable to import pyrites which at least yielded 2 per cent. of copper. As the copper was paid for the chemical works were obliged to introduce arrangements by which the metal could be extracted from the residue after the sulphur had been burnt out in the kilns. So, in 1856, blast-furnaces were put up for that purpose at Yarrow, near Shields, while others smelted the residue at St. Helen's in ordinary copper furnaces, or tried the wet way at other places. All these exertions were, however, of only moderate advantage, until in 1856 Messrs. Becchi and Haupt introduced the chlorine process at Capanne-Vecchie, near Masamaritima, in Tuscany, which in 1857 was circumstantially described by the French engineer, E. Pettigand, in the *Revue Universelle des Mines*. Since then the process has been improved by Max Schaffner and others, and it was only in 1867 that Mr. William Henderson patented this identical process in England, which by mistake now bears his name.

The introduction of the Becchi-Haupt chlorine process was, nevertheless, an eminent commercial success, and in 1877 it was employed in more than twenty works, which worked up not less than 425,000 tons of burnt pyrites. The greatest copper extractors seem to have been the Tharsis Sulphur and Copper Company, with 193,000 tons at their works at Newcastle, Glasgow, and Birmingham; next the Widnes Company, at Liverpool, with 27,000 tons; four other works at Newcastle with 68,000 tons; and W. Henderson, at Irvine, with 11,000 tons of pyrites-residue. The same process is employed in Germany, at the Duisburg Copper Works on the Rhine, and at Okerhütte, on the Hartz. It is now so perfect that after extraction the residue is almost pure oxide of iron, which is even more fitted for iron making than most of the natural iron ores. It is certainly a great triumph of science that this very same material can now be used in the manufacture of Bessemer steel, as is done at the Phoenix Ironworks, near Ruhrort, in Germany, and elsewhere.

The picture looks quite different when we consider the utilisation of the pyrites as at present carried out at the mines themselves at Agordo in Italy, and at Tharsis, La Zarza, and Rio Tinto in Spain, where the poor ore is calcined in large heaps to drive out the sulphur and to form sulphate of copper, which by washing with water is brought into solution, and by means of iron is precipitated in the metallic state. This process is connected with a considerable loss of copper and a total waste of the sulphur and iron contained in the ore, and also causes enormous damage to all vegetation around the mines and to the health of the men. Around the mines of Rio Tinto, La Zarza, and Tharsis, in Spain, there are no less than seventeen communes infected by the noxious sulphur smoke. Upon their complaining the Spanish Government ordered an enquiry, when it was officially stated that the three mines together burnt annually at least 225,000 tons of sulphur in the open from about half-a-million tons of crude ore. When burnt to sulphurous acid this quantity of sulphur will contaminate over 8000 millions of cubic metres of air with 5 per cent. of this highly injurious gas, and it is clear that it carries destruction with it wherever it is blown by the wind. The Spanish Government has, therefore, proposed, in agreement with the mining laws of 1868, that the affected territory is to be divided into four zones, that all the land of the two first is to be bought up by the mines, and that for the two others they shall pay 20 per cent. of the taxes of the infected seventeen communes.

A radical change for the better is only possible by the absolute suppression of the present process, either by the manufacture of sulphuric acid, for which, however, there is no sale, or by another process by which the copper may be extracted without calcining at all. The author had occasion to study the question, and deciding for the latter alternative he gave it his special attention for more than a year. The enormous weight of this question can be easily gathered from the circumstances of the Rio Tinto Company—the largest of the three—which is fettered with a capital of 6,500,000*l.*, and though it owns, perhaps, the largest ore deposit in the world, has unfortunately proved itself to be much poorer than was anticipated. When the great open-cast workings were begun at the end of 1875 the average yield of the pyrites was 2.5 per cent., while in 1877 out of a total output of 759,000 tons about 250,000 tons yielded only 2.5 per cent., and the remainder, too poor to be shipped, was only 1.5. Since then the proportion has become still more disadvantageous; in 1878 for 1 ton of export ore 3 tons of poor ore, from 3 to 14 per cent., must be raised. As it is proposed to export 300,000 tons of good ore, not less than 900,000 tons will remain at the mines, and to deal with this in the old way is quite impossible. It is clear that a better utilisation of the poor ore has become to the Rio Tinto Company a question of—“To be, or not to be?”

When approaching the problem the author saw as the principal points before him that the sulphide of copper is to be converted into a soluble combination by the cold way, and that the substances required for it must lie within easy compass of the mines. This consideration led to the conviction that either sulphate or chloride of copper must be obtained without heating or calcining, and within a time not greater than is required by the calcining process—six to eight months. The experiments have proved that the operation goes best by forming chloride of copper by the action of ordinary sea salt, and a little sulphuric acid, upon the raw ore of the size of gravel, when it is kept moist, and the access of atmospheric air freely permitted. The principal part in this process is played by the oxy-chloride of copper, which is easily formed from the chloride by the absorption of oxygen. This oxy-chloride, in contact with sulphide of copper, becomes a powerful oxydiser of the latter, which is converted first into sulphate, and by the presence of salt immediately afterwards into chloride of copper. So the chloride of copper becomes the means of rapid oxydation by absorbing oxygen from the air and by giving it up to the sulphide of copper, as long as the latter and chloride of sodium or salt are present. The trials, at first made on a small scale, have been going on since the end of March on a large scale at the Duisburg Copper Works, under the superintendence of Dr. C. Fabian, the director of the works, with raw Rio Tinto ore. They have proved that with proper arrangements already (after 10 to 14 days) more than one-half of all the copper has become soluble, which result is only obtained after six to eight months in the old way at the mines. Thus the great problem appears to be satisfactorily solved, and more detailed communications must be reserved for a future occasion.

Bonn, June 28.

DR. ADOLF GURLT.

## ROSSA GRANDE GOLD MINING COMPANY.

SIR,—I read with interest the report of the special meeting of the above company in your valuable Journal of April 27, held for the purpose of considering the proposal of the Minas Geraes Gold Mining Association in respect to Gongo Soco. \* \* \* If Gongo Soco is adapted to be worked by the present hydraulic system, and the direction had the confidence of the shareholders, no doubt the money could soon be raised to try the experiment, but to part with Gongo Soco property with any idea of using the money to work the Bahu Mine of Rossa Grande is, I consider, a most injudicious proceeding, and I strongly advise that if the proposition for purchase by the Minas Geraes Association be carried into effect, upon the payment of the money that it be divided amongst the shareholders, and not be allowed to be wasted as suggested. I observe that Mr. Gordon talks with very much more care and less spec-

ulation now about Rossa Grande than when the scheme to raise 15,000*l.* by debenture bonds was afoot. In the event of the proposition of the American company falling through, which I expect it will, cannot the shareholders take their affairs into their own hands, elect a new board, and raise the comparatively small sum of (say) 7000*l.* to 10,000*l.* to prove if hydraulic mining would be successful on jacotings, and a mine situated as Gongo Soco is? Many persons are of opinion that this system will bring back the ancient renown of the mines of Brazil; in fact, it is an improved adaptation of the water system which obtained for Brazil its great celebrity.

Minas Geraes, June 3.

CHAS. W. WILLIAMS.

## RICHMOND MINING COMPANY.

SIR,—In last week's Journal there is a long letter, signed J. P. Bridgwater, reflecting in most improper and unjust terms upon the acts and motives of the members of the committee of investigation of the Richmond Mining Company. As a member of that committee, and in the interests of the shareholders, I have felt bound to reply to it by the enclosed letter, which for your convenience I send in print instead of manuscript. Your Journal having a very wide circulation apart from the Richmond shareholders, I am sure, acting as I am on behalf of the committee, I shall not appeal in vain to your sense of justice and fair dealing in asking that you will kindly give in your next issue equal prominence to my reply as that given to Mr. Bridgwater's letter, to which it is an answer.

I do not ask you to insert the short introductory letter to the shareholders, though, of course, you are at liberty to do so if you think proper. My reply, though in type, will only be posted to shareholders to reach them concurrently with your next issue, so you will kindly consider it as an original communication, and sent to you in type only for your convenience. JOHN BAYLISS.

Victoria-street, July 11.

## RICHMOND CONSOLIDATED MINING COMPANY.

TO THE SHAREHOLDERS.—Doubtless, like myself, you are getting tired and weary of Richmond business. It is necessary, however, that I should trouble you with one more communication, and I trust it may be the last. The *Mining Journal* of the 6th inst. contained a letter from Mr. J. P. Bridgwater, the avowed friend, and, as I can prove, the agent of Mr. Probert, and it is imperative upon me to expose and correct the untrue and fallacious statements which Mr. Bridgwater has had the audacity to publish. The following is print of a letter I have sent to the Editor, asking him to give it the same publicity as the letter to which it is a reply, and if you desire to form a just estimate of Mr. Bridgwater's character and proceedings on the one hand, and those of the members of the committee on the other, you have only to place the two letters in juxtaposition, and read Mr. Bridgwater's letter and my reply. The paragraphs No. 1 to 18 refer to the order in which they stand in Mr. Bridgwater's letter. JOHN BAYLISS.

## RICHMOND CONSOLIDATED MINING COMPANY.

## TO THE EDITOR OF THE MINING JOURNAL.

SIR,—In the *Mining Journal* of the 6th inst. there is a letter signed J. P. Bridgwater, occupying about half the space of the report of a three hours' meeting of the shareholders in the same issue. Mr. Bridgwater evidently speaks and writes as counsel specially retained for a client having a bad case, and endeavours to divert the attention of the shareholders from the real and material points of the case by raising false and side issues. His advocacy is too transparent, he speaks as the mouthpiece of Mr. Probert—the hands are the hands of Esau, but the voice is the voice of Jacob—and he may rest assured he shall not be permitted further to impose upon the blind credulity of shareholders, whose great fault thus far is, that they have been too trusting and confiding. He is the cherished and acknowledged friend of Mr. Probert, and further is his agent, holding a power of attorney, as shown by his recording at the late poll Mr. Probert's vote by proxy in favour of his own mismanagement. I will now deal seriatim with the paragraphs in Mr. Bridgwater's letter.

PARAGRAPH No. 1.—The statement that the mine has realised “an average dividend of 15 per cent. per annum” is to speak mildly, inexact, and shows that Mr. Bridgwater's figures are as fallacious as his facts; but granting it to be true, how can “these facts and conditions secure credit to a board of directors who have contributed to these results?” The results to my mind speak the condemnation, not only of the directors but their managers, inasmuch as 15 per cent. per annum would only about repay the paid-up Richmond capital once; whereas our neighbours the Eureka Company, working, as the chairman admits, “under exactly similar circumstances,” have repaid to their shareholders their paid-up capital 25 times over. I will assist Mr. Bridgwater's want of arithmetical powers by stating that the Eureka shareholders have paid up only 5*l.* per share, and have received in dividends 10*l.* per share; 10*l.* ÷ 5*l.* = 2; 2 × 25 = 50. The appointment of the committee of investigation was not due to the meeting which authorised it being “held after the ordinary meeting,” or to “the lateness of the hour,” and when (as alleged) “the greater number of the shareholders had left,” but it was arranged and the resolution settled with the full concurrence and approval of the directors before the meeting commenced, and appeared to be only disapproved by Mr. Bridgwater and his personal friends.

PARAGRAPH No. 2.—As to Mr. Pulbrook. According to Mr. Bridgwater's own letter it appears that Mr. Pulbrook was actually a member of the board before he was appointed a member of the committee, though his assertion that “two members of the board” were made members of the board “would favour a contrary interpretation.” But this is a trifling light as air compared with the interpretations which follow. My views as to Mr. Pulbrook were clearly expressed at the last meeting, when I appealed to him to withdraw. His election was fully justified by the knowledge that it had been for some time contemplated by the directors; that he had taken an active part for some years past in the proceedings of the company; that he had written a pamphlet in defence of the directors and the mine, at a time when, as Mr. Elliott said, it was attacked by the unscrupulous “bears”; and that on his election he was ostentatiously and warmly welcomed by Mr. Elliott and the deputy-chairman. And if this be not sufficient, let me refer Mr. Bridgwater to the identical statement that the Eureka shareholders have paid up only 5*l.* per share, and have received in dividends 10*l.* per share; 10*l.* ÷ 5*l.* = 2; 2 × 25 = 50. The appointment of the committee of investigation was not due to the meeting which authorised it being “held after the ordinary meeting,” or to “the lateness of the hour,” and when (as alleged) “the greater number of the shareholders had left,” but it was arranged and the resolution settled with the full concurrence and approval of the directors before the meeting commenced, and appeared to be only disapproved by Mr. Bridgwater and his personal friends.

PARAGRAPH No. 3.—It is not true that “the committee of investigation now seek to strengthen their position by nominating Col. Stewart,” but it is true that in so doing they desire to strengthen the position of the company, and to strengthen the confidence which should exist between shareholders and directors. Mr. Bridgwater says he does not “consider the poll demanded in favour of Col. Stewart valid.” This only shows that, although a barrister by profession, he has not yet mastered the A, B, C of procedure at public meetings of joint-stock companies. Mr. Bridgwater says—“If Col. Stewart be carried the committee will have three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can now see, in a most anomalous position, and who, at some risk to his own reputation for consistency, has “gone great lengths” in supporting Mr. Probert and his colleagues at the board as against the report of the committee, but I am willing to concede that as chairman of the committee and chairman of the board he has three of their nominees: Mr. Pulbrook, Dr. Maybury, and Col. Stewart on the board, also Mr. Hopkins.” He has the temerity to say this, knowing that Mr. Pulbrook is not on the board, and if returned there by order of the Court after asserting his right he will most certainly withdraw, or at any rate will not remain. Mr. Hopkins cannot be regarded as a member of the committee from the point of view in which Mr. Bridgwater refers to him. It is far from my intention to say this in any offensive spirit to Mr. Hopkins, who has unfortunately been placed, as all can



suit with the Eureka Company was on Jan. 23, 1877, I am justified in asking Mr. Bridgewater whether his marked total desertion of the company at that juncture was due to prior information of the coming disaster, or to the gift of conscience to which he can hardly prefer a claim. Shareholders who desire to know "how the cat has been jumped" in this direction will find, as I have done, much instruction and an unerring guide by a careful inspection of Mr. Bridgewater's account in the shareholders' ledger, showing his recorded transactions in the shares of the company, commencing Dec. 3, 1873, shortly after Mr. Probert's first appearance at Eureka, and continuing to the present time. It may be also interesting to note the prices at which he acquired the shares, and the prices at which from time to time he sold them. I am speaking of transactions recorded in the company's books, and may fairly ask are there any unrecorded ones? As Mr. Elliott at the last meeting on the 2nd inst., when speaking of shares held by Mr. Probert in 1876, said "they were not registered, but I had his authority for the statement I made—that he was a large holder. People often buy shares and leave them in their broker's hands" (1). I am bound to admit that the archives of the Richmond office afford abundant testimony confirmatory of the last eleven words, but it appears a course of action which may cover great abuses when adopted by those officially connected with the administration of the company's affairs.

PARAGRAPH No. 16.—Mr. Bridgewater says "It is impossible in the warmth of a public meeting to make oneself clearly understood; I, therefore, adopt this course of writing to you." From personal observation and attentive listening at the past three or four meetings of the shareholders I must admit the force and truth of this statement as applied to himself, for I have failed to understand him, and I must say his letters are scarcely more intelligible, for throughout the latter there is a want of logic and coherency in his arguments, and for the absence of which he unwisely endeavours to compensate by rash audacious assertions and base personal insinuations. The shareholders and not "the committee have been graciously pleased to allow him (Mr. Probert) to make a reply." In this decision the committee concur, and as "he is now engaged upon the reply," the committee are quite content, as regards Mr. Probert's resignation, that Mr. Bridgewater should consider his "discretionary power is at an end."

PARAGRAPH No. 17.—Mr. Bridgewater says he has "not the least doubt that Mr. Probert's reply will be a triumphant refutation of all the theories and charges contained in the report; I have already told him that in the event of such an improbable, and to my mind impossible, result I will be the first man in public meeting to hold out my hand to him, and ask forgiveness for the injustice in that case unwittingly committed;—meaning, there is no apprehension that the members of the committee will find themselves "in the charmingly un-English position of being judges as well as accusers," because, as before stated, Colonel Stewart's election will only practically make two of the committee on a board of seven members—Mr. Hopkins being regarded as a neutral. But why is this false issue raised? It is well known that the shareholders and not the directors will decide the questions between the committee and Mr. Probert, and it is for them, from whom all power should emanate and to whom all power belongs, to give "an unbiased and unprejudiced consideration" of the questions at issue, and in the interests of all concerned it is most devoutly to be hoped they will do so after reading carefully the report and reply. Is the sequence of Mr. Bridgewater's letter to be found in the wild suggestion and invitation to join so rash a movement as "in the whole matter was placed in abeyance by the resolution carried at the last meeting it would not be becoming in me to express my views, and it is not decent for Mr. Bridgewater to parade his personal and, may I suggest, interested views thereon. "To elect Colonel Stewart to the board" will not be a marked "injustice to Mr. Probert," neither will it "interfere very materially with the value of his reply" unless the reply should need correction, in which case it will be open for any member of the committee if so disposed to see that the issues are distinctly drawn and clearly stated to the shareholders. In conclusion, I must apologise to Messrs. Hopkins, Broughton, Bower, and Elliott for having referred to them, but it has been unavoidable, owing to the reckless introduction of their names by their rash champion, and I would remind Mr. Bridgewater that the office of a company is not to be regulated by private appeals addressed in the first instance to editors of public journals. This communication will be sent direct to shareholders, and a copy to the Mining Journal, for the sole purpose that those who have read his letter may receive the antidote after the poison, and I would suggest that having regard to the terms of the resolution passed on the 2nd inst. he will best serve the interests of Mr. Probert, Mr. Elliott, and all others he wishes to serve—and last, but not least, will serve also the interests of the company—by maintaining, if he can, a manly and dignified reserve until Mr. Probert's reply arrives, and if so the committee will be silent also; if he will not, then I would beg that in his communications he should adhere to facts within his knowledge, and not draw so largely upon his imagination, for so surely as he does I shall not hesitate at any sacrifice of time or convenience to reply and to correct him whenever I find his statements or inferences are wrong, and in the long run I think it will be found that after all his knowledge of the affairs of the company is of the most superficial and unreliable character, and that in any controversy he may raise I shall have the advantage, arising from having devoted many consecutive months of time and labour to inform myself and the shareholders on many matters affecting our common welfare in this company, which has a splendid future if its profits are not frittered away as they have been in the past.

Victoria-street, Westminster, July 10.

#### THE RICHMOND MINING COMPANY.

SIR,—I think Mr. John Elliott acted unwisely at the meeting on July 2 in taking up the defence of the past management of this company. When he stated that "the board has been attacked as if they were the greatest imbeciles," I am afraid he "hit the nail on the head," for the more that shareholders know of the past and present mismanagement of their property and affairs the more they realise that the expression imbecile is a very appropriate and a charitable one. Mr. Elliott would have the shareholders forget the fact that when the works were shut down in April, 1877, owing, as was alleged, to the lawsuit, there was not enough ore in the mine outside of the disputed ground to keep even one furnace going. (See committee's report, page 10.) Up to that period of the company's career the shareholders had only received in dividends 180,768*l.*, or 3*l.* 7*s.* per share, from the 162,000 tons of ore from their mine, which had a gross assay value of over 2,000,000*l.* sterling. The new ore bodies, which enabled the works to be re-started in September last, and which have proved so rich, were discovered in June, 1877, by the Eureka Company, in their 5th and 7th levels, under their Margaret ground, and we have, therefore, to thank that company, and not the board or the management at Eureka, for the same. Shareholders should carefully examine plans 8 and 11 of the committee's report, as from them they will see that the apex of these ore bodies is within the Margaret ground of the Eureka Company. Mr. Elliott professes to be very wise and confident about this "compromise line" agreement of June, 1873, but he forgets that "what is sauce for the goose is sauce for the gander," and that if this "compromise line" were not extended beyond the point X at the Margaret corner the Eureka Company could have followed this new ore body on its dip from their 5th and 7th levels into the Richmond, Utah, and Silver Region locations.

Mr. Elliott is also very wrong in stating that we should have had no mine at this moment but for the refinery. I know as a positive fact that none of the large and most reliable refineries in the States failed—Baltimore, Omaha, Pittsburgh, and St. Louis, and these have handled the bulk of the bullion produced in the Eureka and Salt Lake districts during the past five years. The Eureka Company never lost a shilling by Mr. Selby's death, although they incurred a delay of a few months in realising on some of their bullion. It was impossible for Mr. Selby's works to have handled both the Eureka and the Richmond bullion simultaneously, and Mr. Meyer's policy has always been to prefer the Omaha and eastern refineries to San Francisco. During the financial years 1875, 1876, and 1877, which covers the period of the establishment of the Richmond refinery and the death of Mr. Selby, the Eureka Company smelted 91,662 tons of its ores, and from the product thereof paid its shareholders in dividends 105,000*l.*, or 2*l.* 2*s.* per share, whilst the Richmond Company smelted 102,676 tons of its ores, from the product of which the shareholders received in dividends only 87,746*l.*, or 1*l.* 12*s.* 6*d.* per share. Shareholders will remember that during this same period 37,800*l.* were borrowed on debentures at 10 per cent. p-r annum, to pay the company's debt to its bullion agent; and that they had lost over 20,000*l.* in 1878 in their stock of ores, fuel, and timber through the gross carelessness of their general manager. If shareholders require still further evidence of "imbecile" control on the part of the directors, and gross mismanagement at Eureka, I would direct their attention to page 18, paragraph 2, of Mr. Eiler's report, wherein he refers to the past, and which appears to be the present, mode of sampling and assaying the ores from the mine. Then I would ask them to refer to the printed statement of tons of ore hauled from mine and reduced, and of the gross product therefrom (at Eureka standard assay value) from May 1, 1877 to Feb. 28, 1878, which the directors have issued with their report for the past financial year.

This statement shows that 23,254 tons of ore from the mine were smelted, the gross assay value of which in our money is 369,850*l.*, or about 16*l.* per ton, the gross assay yield of which is given at 87*s.*, or 15*l.*, so that the smelting loss would appear to be only about

6 per cent. of the gross assay value of the ore. Mr. Probert, in his official correspondence, states that he considers 15 per cent. smelting loss to be "good close" work; according to him, therefore, the smelting loss should have been 2*l.* 8*s.* instead of 1*l.* Now, if shareholders will turn to page 33 of the committee's report, they will see the Richmond refinery losses in metals amounted to nearly as much per ton as the above-mentioned statement shows was incurred in smelting the ores, at the rate of 4*l.* 4*s.* of ore to 1 ton of bullion. This clearly shows how utterly fallacious and misleading are the weekly cables received of estimated returns, and under the present system of gross ignorance and carelessness in sampling and assaying the ores shareholders cannot really know what is the real value of the product of the ore until it is actually marketed. At the same time, neither the directors nor the management at Eureka know what are the actual losses in the precious metals in the process of smelting.

If the directors possessed any real business capacity, and exercised mere common sense, they would have seen from the above-mentioned statement, and chiefly from the monthly records, that the estimated weekly returns as cabled to them amounted to 378,800*l.*, of which the 244½ tons of purchase-ores, or fluxes, represented about 20,000*l.*, as per assays, so the gross yield of the product of the 23,254 tons of ore from the mine would be nearly 350,000*l.*, which amount, deducted from the 369,850*l.*, the gross assay value of the ore, gives the working loss in smelting at nearly 5½ per cent. of the gross value of the ore. As Mr. Probert has officially and repeatedly informed them that he considered a working loss of 15 per cent. the best they could expect, they should have seen that some egregious error existed in these Eureka returns, and that it was incumbent upon them to look into this matter of sampling, assaying, and smelting before issuing such a statement to the shareholders. There are other points showing "imbecile" control and management of our property and affairs which I will allude to on a future occasion. A SHAREHOLDER.

#### THE RICHMOND MINING COMPANY.

SIR,—I really cannot understand our Chairman, and I am afraid he is either very weak or very elastic. He comes to be apparently entirely conquered by the charms of Mr. Bayliss, but as soon as the vice-Chairman or Mr. Bower display their bluntness he is quite unable to resist, and is quickly reduced to the position of the general lover in the Beggar's Opera, who says "How happy could I be with either were 'tother dear charmer away." As for Mr. Bower, I certainly cannot think that a man who cannot remember the number of shares he holds in the company is possessed of the kind of intellect fitted for the office of director, and I am strongly of opinion from a variety of circumstances that have come to my knowledge that some change in the directory is imperatively necessary.

A SHAREHOLDER FROM 1872.

#### THE RICHMOND MINING COMPANY.

SIR,—Who is Mr. Pope, Q.C., who has so suddenly appeared at the Richmond meetings to support the directors through thick and thin, and why is he there? He lays down the law in the interests of the board, but when appealed to on a point that might be inconvenient to those gentlemen, he is not present to give legal opinions. At the last two meetings he has spoken over and over again, in defiance of all rules of meetings, and has never been called to order by the Chairman. If the business of public meetings is to be monopolised by counsel from Westminster Hall, the poor unfortunate shareholders will be completely shut out from all participation in the affairs of the company. It appears to me there are only four people entitled to speak at the Richmond meeting—the Chairman, Mr. Pope, Q.C., Mr. Bridgewater, and Mr. Bayliss.

#### THE RICHMOND MINING COMPANY.

SIR,—The weekly run in this week's telegram is \$65,000, from 1030 tons of ore. When these shares were at 8*l.* each the weekly returns were \$90,000 from 1030 tons of ore, so that there is a falling off of no less than \$25,000 per week, and in the face of this there is a rise in the "market" value of the shares of 4*l.* 10*s.* per share, equal to 227,500*l.*, making the selling market value of the mine amount to no less a sum than 667,500*l.*, or \$2,670,000! Although no new discoveries have been reported to make up for the enormous rate of consumption of ore which the furnaces have been forced up to. As to the refinery report, this does not give any useful information as to the result of weekly working, as the amount refined for the week is taken out of the general stock of bullion. It would be wise for investors to demand to know what portion of the \$65,000 is represented by silver and what by lead, and at what price the latter is estimated at, and not lose sight of this important point, and others equally so, in looking after the squabbles between different sections of the board.

That the mine is a good one, and a fair speculation at a fair price there is no doubt, but the reports from the mine and the accounts published in no way justify it being at a market value of 667,500*l.* If the percentage of profit was only 11 per cent. upon high grade ore (\$90,000 to 1030 tons), what is it likely to be on low grade ore (\$56,000 to 1030 tons)? It must be remembered that the expense of returning is precisely the same for every ton of bullion smelted and refined. In spite of all this the "bulls" have put the shares up another 13,750*l.* At 6*l.* per share this mine, properly managed, and providing the stopes have got a fair amount of ore left in reserve, would be a fair speculation, but at the enormous sum of 12*l.* 10*s.* per share, I am still—

A "BEAR" AT PRESENT PRICES.

#### THE RICHMOND MINING COMPANY.

SIR,—It may be amusing, perhaps a little interesting, for persons not shareholders in the Richmond Company to attempt to picture to themselves the ultimate fate of that company amongst the contending parties, but it is quite the reverse for those whose names stand prominently forward on the share list of this, so far, valuable company. It is contemptible, indeed, to see party spirit run so high that not only self-interest is forgotten but the un-English conduct is resorted to of condemning a man unheard—in other words, kicking him when he is down. Surely, if the members of this committee—the men who foul their own nest, and praise the decision of the American Law Courts—had such a good case they would only have been too glad to have waited patiently for Mr. Probert's defence—"Oh, that mine enemy would write a book!"—in order that they might double him up in style when fairly standing on his legs. But, no! they first hit him foul, and then, when on his back, proceed to jump upon him and kick his very life out. I need not trouble you with any more remarks about this infallible (?) committee. But there are some others—perhaps committeemen in disguise—who deserve the reprobation of all lovers of justice and fair-play. I will pass over "A Holder of Two Hundred Shares," and at once tackle "A Bear at Present Prices." Now, this worthy individual does not hesitate to write a most damaging letter (as he thinks) to your valuable paper in order that he may carry his point and do away with the refinery—a "fiasco," as he calls it. Then there is a still more worthy individual, who hails from "Frisco," and signs himself "J. H. R." Now, would you believe it, this person in order to fill us with all the scandal and venom of Eureka has had to sneak about the mines "incog," he boldly tells us, for fear he should meet this "Lord Paramount of the situation, the Sir Oracle of the comedy enacted by himself." Surely we have here a member of some "Private Enquiry Office" out on the sly, doing a little bit on his own account—a quiet spec. during a slack time. No person having the least pretensions to be considered a gentleman would have been guilty of such mean and contemptible conduct; and yet he boasts of it, and thinks himself wondrous clever to have preserved his incog., though meeting every now and then this "pensioner on the Richmond bounty." Well, this mining "Pollack" must have spent his time very badly, for he takes up a whole column of your paper with only beating about the bush. He is to smash poor Mr. Probert into smithereens; but, alas, it is all personal abuse; there is no

"reliable corroboration of the many damaging reports." Wonderful to relate, "he does not care to give them (the report) in the seemingly exaggerated form in which his informants communicated them to him until he had first become satisfied of their entire genuineness." I suppose he never was satisfied, or he never would have taken up so much of your valuable space and our valuable time with nothing else but a paltry description of the personal appearance of a "much-abused person." The case must be a very bad one that boasts of such supporters, and my advice, humbly offered to my brother-shareholders, is to hear both sides of the question before they make any alteration in the management of a mine which is paying only 11½ per cent.

Bristol.

#### THE RICHMOND MINING COMPANY.

SIR,—I write to make a few enquiries. Are we shareholders to be kept to eternity posted with fly-sheets and circulars about the state of the above company? Have the shareholders not paid 6000*l.* for a report, and why were not all these statements placed in that report? It seems to me that there is little or no credence now to be given to what the committee write or say. They are acting like drowning men grasping in their falling strength at weak straws—that is, on personal charges and wild statements. We receive circulars from the committee between the meetings with no explanation why they are sent, or why they are not in the report, and every line is a direct charge against the board, yet at the meetings the committee seem afraid of the directors, for they invariably inform us (the shareholders) at our meetings that they and the directors are mutually agreeable to do this and that. Now, Sir, I feel greatly and personally insulted by the sayings and doings of this committee of investigation. If they have investigated the affairs of the company they seem incapable of even casually investigating the minds and capabilities of the shareholders.

They treat us as much as though we had no opinion or judgment of our own, and that whatever they tell us we are to believe, and to act and vote accordingly, without even allowing us time to consider or digest their grave charges and startling suggestions. If they say the report is to be received and adopted we are to do it; if the managing director is selected for attack we are to join in the diversion; or if Col. Stewart is to be put on the board he is instantly to be put there (for you will observe, Sir, these resolutions are always proposed by a member of that committee, and never by an outside shareholder); and when we hesitate, gasp for breath, and ask for a little more time to hear a reply in order not to be prejudiced and partial; then immediately we are showered, peppered, pelted, and confused with circulars, letters, proxy papers, and fly-sheets, containing facts, figures, statements, charges, &c., and no one to consult, no opportunity to test either facts, figures, statements, of charges, but simply the denunciative voice of five men forever crying—Believe us, believe us, and act as we are directing and advising you.

In conclusion, permit me to say the most singular production in connection with the spirited controversy now before the shareholders is that just to hand signed "John Bayliss," purporting to be an unfavourable review of the Richmond Company as compared with its neighbour the Eureka. Let us see; in my limited judgment the matter stands thus quite in favour of the Richmond: 5*l.* fully paid-up is better than 8*s.* per share paid-up, with a liability of 19*l.* 12*s.* outstanding, possibly the Eureka shareholders may yet have to pay for the mine; so far, they have clearly paid nothing for it. The Richmond has out of the 5*l.* paid up given 4*l.* 1*s.* 6*d.* towards the purchase of the mine itself, which cost 220,000*l.*; the balance of 18*s.* 6*d.* per share represents the working capital of 50,000*l.*, as against 8*s.* per share, or 20,000*l.*, the working capital of the Eureka, the difference is 30,000*l.* I feel quite satisfied the Richmond directors can and will show an equivalent for this improved plant, better machinery, and a larger area of locations than our neighbours; and this is quite clear that had Mr. John Bayliss not omitted to add to the Richmond dividends of 180,768*l.* the 139,000*l.* in hand at the date of the last balance-sheet the total dividend receipt would be 319,768*l.*, or 89,668*l.* in excess of the Eureka, stated to have been 230,100*l.* up to Aug. 31, 1877. No doubt to this amount the Eureka might for the same extended period be entitled to some addition, but still there would, I take it, be a balance in favour of the Richmond corresponding to their 30,000*l.* excess of working capital. Mr. Bayliss does not favour us with the date when the Eureka commenced; he leaves us to assume that the Richmond and Eureka are contemporaneous in point of date. Is this so? Nor does he state where or from whom he obtained his figures, which, though not intended to be, are very reassuring to the Richmond shareholders. I write this hurriedly, fearing that before I finish another letter will proceed from the fertile pen of Mr. John Bayliss, seeking to refute what appears to me to be the unanswerable exposition of the whole controversy by Mr. Bridgewater in your last issue. Do spare us if you can.

A PERPLEXED, BUT NOT EASILY CONVINCED, SHAREHOLDER.

#### MINING ON THE PACIFIC COAST—PROFITABLE RESULTS.

SIR,—The following financial statement of ten mines on the Pacific Coast, nine of which are situated in Nevada and one in California, may be interesting to many of your readers. The statement is compiled from the Mining Statistics given in the New York Engineering and Mining Journal of latest date. This paper has the reputation in the United States of being the ablest and most reliable Mining Journal, being edited by Prof. Rossiter W. Raymond, late United States Commissioner of Mines West of the Rocky Mountains. The amount of calls and dividends is given to June, 1878. The values are in pounds sterling.

Name of mine.	Location.	Number of shares.	Par value.	Total amount of calls.	Total amount of dividends.
Belcher .....	Nevada...	104,000	£ 20	£290,840	43,079,420
California .....	" .....	540,000	20	None	5,618,000
Chollar .....	" .....	28,000	20	320,000	616,000
Consolidated Virginia .....	" .....	540,000	20	94,920	8,100,000
Crown Point .....	" .....	100,000	20	334,674	2,317,600
Eureka Consolidated .....	" .....	50,000	20	20,000	500,000
Eureka Gold Mining .....	California	120,000	20	None	429,000
Grand Prize .....	Nevada...	100,000	20	None	80,000
Northern Belle .....	" .....	50,000	20	None	285,000
Raymond and Ely .....	" .....	30,000	20	114,000	615,000
Results of 10 mines .....		1,562,000	£ 20	1,174,434	21,638,820

The above statement shows that the average call per share has amounted to only 15*s.*, whilst the dividend paid has been 13*l.* 17*s.*, or about eighteen times the amount of the call.

R. M. B.

#### GOLD MINING.

SIR,—I am glad to see gold mining making such wonderful progress, and I beg to call the attention of the public to the vast number of gold mines now in the Dividend List, and I know more will be there soon. The Congress has passed off satisfactorily. No doubt there will be a run of speculation abroad—in fact, more than ever was known before—and after such a serious and long crisis I believe the sun will shine brilliantly over the mining interest again. I am also glad to see in your valuable Journal letters on the Gold Fields of Chili, Queensland, Patagonia, Tasmania, and on the great mineral wealth in the Argentine Republic. The latest reports from Buenos Ayres inform us that some rich silver mines have been discovered in the province of Mendoza, which will give over 2000 marcos of silver to the cajon. It is also astonishing to see what rapid progress the celebrated Don Pedro North del Rey Gold Mines are making. Sinking is commenced and explorations are going on in all directions, and at any hour something may occur that will be of great benefit to the fortunate company. I regret to see in your important paper that the refuse ore of St. John del Rey Mines will give 3 oits. per ton, of the value about 100,000*l.* per annum. Could not they adopt the same process for their tailings as the Don Pedro



North del Rey Mine superintendent has invented, and which has answered so remarkably well? — AXLE.

#### SOUTH STAFFORDSHIRE COAL AND IRON TRADES.

SIR,—The Journal of the past two weeks has contained letters on this subject of rather an amusing and novel character, which have induced me to call the attention of your two afflicted correspondents to a little truth, after reading which I think they will be inclined to let well alone. It is well known that a bankrupt coalmaster in the Black Country (as we call the colliery owners in Staffordshire) is never heard of. I cannot remember a colliery owner pure and simple, that is a man who has confined himself to his colliery business and avoided speculations, ever becoming a bankrupt, and this fact alone is, in my mind, sufficient to prove that whether collieries are subject to drainage rates or not, they are beyond doubt the very best and, as a rule, the very safest things a man can be connected with in the shape of business, and although some of the collieries have required a large capital to open them, the shareholders have not the least fear of not being requited. The ironmasters and manufacturers have cause to complain; they are truly the parties who have to pay the smart in the high price at which coal always sells in Staffordshire. Lord Dudley has the best share of the trade with the ironmasters by supplying them with the raw material—coal, ironstone and limestone, and if his lordship were to reduce the price 30 per cent. there is no doubt he would have a great profit left, and by so doing the noble lord would drive the other colliery owners to do the same, and so help the ironmasters and manufacturers.

It is a well-known thing that those who get and sell the raw material (as it is called)—coal, ironstone, and limestone—in good times and bad times make large profits, whilst the ironmasters and manufacturers have to fight against an overgorged market from home and foreign countries where, by protective duties, we are shut out from their markets altogether. The framers and founders of free trade intended it to be confined to articles of food for the people, and never intended to throw our market open to all the world, free of duty, at less than we can produce them at. It is no good to tell our working and starving people that certain articles can be had at 1s. which at one time were worth 2s., when they are deprived of the means of getting the required shilling. It would be better the price were 20s., if they could get the money. Our free trade rulers are as fast as possible driving the country down to the bitterest depths of poverty and starvation. Our people cry, give free trade to those who give us free trade, and as duty is levied on our produce so levy duty on theirs as they come here. Let the working population of our country make this the standpoint at the next election and refuse to vote for Tory or Reformer who will not pledge himself to do the best in his power to bring this honest live-and-let-live result about. Open ports to those who give us open ports, and none other. Free importation of food must be continued. *Wolverhampton, July 10.* — TRADER.

#### THE MINING INTERESTS—"HOME AND ABROAD."

SIR,—The rise and fall of the Roman Empire is sounded from day to day in all our schools and academies, so that everyone more or less is acquainted with the origin, progress, consummation, disintegration, and collapse of that once powerful and extended people and nation. Criticism, censure, or approval is equally ineffectual to redeem the errors, fanaticisms of its rulers, or the ferocity and barbarism of its armies. Rome was fated to fall, while the King of Italy and the feeble Pope alone represent the power and might of this once extended and magnificent, yet exalted, empire.

Cornwall, the cornucopia of England, traces its history back to trading with the Phœnicians some 2000 years before the birth of Christ, and from that remote period down to the most recent date has maintained a supremacy and all but exclusive market for the metal of tin as an exceptional product—the reward of its own industry and thrift.

The indomitable and healthy sires and matrons of Cornwall have borne sons and daughters of energy, intelligence, observation, and character; and, with the true hardihood, enterprise, research, and determination of their progenitors, have traversed the seas and sought the land of promise in the fertile fields, plains, mountains, and earths of Australia; so that no band of residents or explorers of the nooks and creeks with which that country abounds can boast of a fraternity unless a scion or member of the family of the South West of England is associated with its members. Hence we owe the discovery of tin in Australia, culminating in Tasmania, up to the present time to the perseverance, discernment, and application of Cornish sires in the works of discovery and development. All hail, therefore, to the Cornish motto of "One and All," for if the Mother Country is shorn somewhat of its remunerative industry yet the community at large is benefited; while the offshoots in this one of the brightest of the Queen's colonies revel in the luxuriance of prosperity that gladden their hearts in the benefits and advantages conferred on the manufacturers, artisans, trades, and peoples constituting the mass of England's workpeople and industries in the prospect of soon having metallic tin at 30s. a ton. This is a consummation devoutly to be hoped—a blessing to the community at large, though temporarily a loss and disadvantage to Cornwall in particular. The inhabitants of the Peninsula are hardy, intelligent, and industrious, exceptional to a degree, and if their tin mining fail there is that of fishing and agriculture, while their quarries of granite are all but inexhaustible. A great portion of the wealth, employment, and trade of North Wales spring from slates; yet all authorities concur in the hypothesis that Cornwall in its granite possesses ten-fold the field for thrift, labour, and gains over that of the Principality in regard to its slates. Why, therefore, is not every city and town throughout the length and breadth of the land supplied with Cornish granite for building, kerb, and constructive purposes? Again, why are not the fish which swarm on its seaboard utilised by its inhabitants, as assuredly is not the case in any approach to a maximum extent? We may again ask why should the skill, discernment, and industry of fishermen from Yarmouth and other Eastern ports usurp the rights of Cornishmen at home? Simply because they too recklessly rely on broken reeds. Tin and copper mining have been long on the wane. They have had a long and protracted supremacy. Their decay has been tenacious and patent to all observers, and for the benefit of the community at large we must hope that metallic tin will recede to 30s. a ton and copper to 50s. The loss to miners will be infinitesimal when compared with the advantages to manufacturers and consumers.

In the years 1872 and 1873 Cornwall was the all-absorbing theme. Its tin mines were inexhaustible, and the future profits fabulous. Now the existence of such mines as Dolcoath, Tincroft, Carn Brea, Mellanear, West Tolgus, East Pool, Botallack, South Caradon, Devon Great Consols, and many others depend wholly on practical economy and retrenchment, explosives, rock-boring, and improved and simplified machinery. These are the requirements of four to five years, and before the like period has again passed into oblivion we shall find that Messrs. Tregonning and Co. are only the first of the tin-smelters who retire into voluntary liquidation and seclusion. It was never intended by the Divine Creator of the Universe for one particular district or people to hold in perpetuity the product of any one article or commodity; while there can be no reasonable objection raised to the vast regions of America, Australia, New Zealand, the Cape, and Canada being as rich in copper, tin, and lead as they are in agriculture, gold, silver, and precious stones. Nor are we to ignore the vast resources of India, Russia, Turkey, Egypt, Japan, and China in every description of metal and mineral; while, to give some faint idea of the scope and field for operations, we may mention that in Egypt alone the estates of the Khedive and his family comprise a million acres of rich agricultural and mineralised lands. If it paid the Phœnicians and Romans to seek England for its tin and metals it surely will recompense us to foster and utilise the products of our vast, extended, and numerous colonies. Cuba is the choicest gem in the Spanish crown, while coal and iron are the chief diamonds in that of our beloved Queen's. Minerals and metals are the staple supports of our colonies, the pioneers of civilisation, and the bulwarks of social reforms, amelioration and intellectual culture and progress.

A few years ago such mines as West Tolgus, Mellanear, Agar,

Peavor, Pedn-an-drea, West Seton, Eliza Consols, and Wheal Prussia would have startled and awakened the greed of the speculative public with the extent and brilliancy of their products and gains; but, owing to the unexpected, though most acceptable, yield of our colonies, they become only ordinary commercial successes. This is hard to bear, yet we must acknowledge and confess though home mining suffers in consequence yet the community *de facto* is advantaged—manufacture, constructive enterprise, and trade in general feel and reap the benefits and ameliorations.

It is not right, however, to despair in respect to copper and tin mining at home through the efflux of tin from Australia or copper from Peru, Chili, and the Cape. The shameful neglect of improved machinery for drainage, discharge, boring, dressing, and locomotion, coupled with little heed to unnecessary expenditure at surface, owners, account men, cartage, favouritism in supplies, and numerous other luxurious, and indolent, though expensive, creeping and growing ingredients of long standing, and cherished objects associated with former prosperity must each and all be carefully attended to and weeded out whenever superfluous or unnecessary. It is a maxim in the economies of mining, as in private life, that justice should qualify and restrain generosity. Not 1s. should be expended in mining that would not be tolerated in private life, while from ample sources of information and observation we do not hesitate to say that at many a great and struggling mine some 10 to 15 and up to 20 per cent. can be saved in the monthly costs without practically deferring efficiency.

R. TREDINNICK,  
Consulting Mining Engineer.

*Exchange, Coleman-street, London, July 8.*

#### THE DEBENTURE BOND AND MORTGAGE COMPANY.

SIR,—Acting upon the valuable suggestion contained in your remarks in last week's Journal in reference to this company—"That no time should be lost in making obvious to all the principles upon which the company proposes to earn profits for its Share and Debenture Bondholders"—I beg to say that with regard to that portion of the company's business to which you refer I shall feel obliged by your kindly allowing me to correct what is evidently a most serious misapprehension. The purchase of City and municipal bonds to which you allude, and which, as you rightly observe, do not yield more than 3½ per cent. per annum interest as an average, are not made by the company as an investment of its funds, but solely as anticipated purchases for account of third parties who contract with the company to pay for them by agreed instalments and at stipulated rates of interest on the capital so employed. It is from this source and not from the revenue yielded by the bonds themselves that the company derives its profit, since no advance is granted, and consequently no investment made, in this direction except "at a minimum rate of interest of 6 per cent. per annum," as provided for by the Articles of Association and upon an agreement with the intending purchaser that the principal and interest of the capital thus applied on his behalf "shall be repaid within a given term by equal quarterly or other instalments payable in advance." I need scarcely point out to you that the continuous re-employment of capital so employed, and as when the quarterly repayments are made to the company, still further increases the minimum ratio of 6 per cent. per annum originally provided for, but I may add that this class of business, profitable in itself and especially safe, since ample margins are required to be kept up on all securities bought, and which remain deposited with the company until paid for, is by no means the only kind of business undertaken by the company, but that, as a financial institution, it negotiates every description of sound financial transactions. As a matter of experience I can say that we have at present a considerable number of holders of advances of the foregoing character and a much larger proportion of applicants for further allotments of the same nature than there are funds available which can be applied in this direction (the Articles of Association limit the amounts to be so applied), from which it is obvious that borrowers find their advantage in accepting them on the terms offered. The principle of the system, as you will perceive, is, therefore, not new, but is simply an extended application to any approved security of the old one adopted by land and building societies in their advances for terms of years for the purchase of approved properties. W. B. HARRISON, Managing Director.  
*Metropolitan Chambers, July 10.*

#### REMINISCENCES—No. X.

SIR,—Many years ago an uncle of mine amused me by telling of a hoax practised by a farmer on a Londoner, who wanted to know a little of the old Cornish language, which is no longer vernacular, and which is now almost unknown in the county; but it is said that the Welsh language is very much like it. The gentleman invited the farmer to drink; the farmer, taking the glass, said—"Tregonnebris, Sir." "What does that mean?" asked the gentleman. "That means, in Cornish, 'Your good health, Sir.'" The gentleman then said, taking his glass—"Here is to your good health." "Castallack," said the farmer; "which means 'I thank you.'" The gentleman went away satisfied that the farmer knew something of the old Cornish dialect. Tregonnebris and Castallack are names of farms near Penzance.

When I was a boy I used to hear a great deal said by the old people around me about apparitions which had been seen, as was said, at different places mentioned—so that I became afraid to go out alone by night. In a road about half-a-mile from my father's house there are, or were two stones, the tops level with the road—put there, it is alleged, to mark the burial-place of a Jew who hanged himself to a tree near that spot. I was horribly afraid to go there alone by night. The mention of a Jew has brought to my remembrance a circumstance which occurred about 30 years ago. A Jew, who travelled through Cornwall, vending watches, &c., I knew well, and purchased a ninety-guinea article of him. This man was engaged one night in gambling at an inn, and it is supposed that he was very successful in winning money. Someone (probably a loser) outside the window in the dark shot him down dead at the gambling table. I am not aware that the murderer was discovered by man; but Divine vengeance will follow him some time, unless repentance and forgiveness intervene.

In passing over the Cornwall Minerals Railway to-day I observed that nearly all the sleepers (deal, transverse) are far gone into decay by the rot. Considering the recency of the construction of the line this is remarkable. I observed that a small portion has been renewed; the whole line will soon require it. The wood must have been of a very inferior quality.

The clay-workers in the Roche district leave their work at 3.30 P.M. They commence at 7 A.M., and in the day stop 40 minutes for refreshments—so they only work 7 hours and 50 minutes per day, which is less than any class of surface labourers that I know. How is that? Did the "strike" reduce the hours?

The clay traffic on the Minerals line has much declined from a cause which it may seem strange to state—the common carriers carrying cheaper than the railway company. Nearly all the enormous quantity of clay which till about 12 months ago was carried from Bugle on the line to Fowey is now carted to Charlestown. It is said that the carters give 12 to 18 months credit to the clay proprietors, whereas the railway company expect payment monthly. If I owned the railway I would drive the carters off the road in quick time. The railway company can better afford to carry at 1s. per ton than the carters at 2s. 6d. or 3s., or even more, and can better afford to give time for payment than the common carriers.

The loop line to connect the Cornwall Railway with the Minerals Railway at Par will be opened, it is supposed, in August. It will save a walk of about three-quarters of a mile between the stations. Par, in my estimation, is a more eligible watering-place than some other sea-side places in the county which are more resorted to. It is certainly better than Perranporth. Houses are wanted at Par to accommodate lodgers. If good houses were provided it would soon become a choice place for summering. There is a long beach, good inland scenery, railways in all directions, good shops, and numerous places of worship for Churchmen and Dissenters.

Among the "ups and downs" in the world I may quote the Lanyon family, late of Kennal Vale. The late Mr. Richard Lanyon

was, I believe, a partner with Mr. B. Sampson in the Kennal Gunpowder Works there, and his co-adventurer in numerous mines. He died a few years ago, leaving at least one son, who used to travel for the firm for taking orders, receiving money, &c. He indulged freely in drink, and since his father's decease his intellect failed, as was evidenced one Sunday in Falmouth Church, when he interrupted the minister in his duties, and at the offertory placed his gold watch and chain on the plate as his offering. I do not suppose that it was accepted. After that he went to Australia, where he is now—an imbecile. I was informed yesterday that the Australian authorities are about to ship him for his native country to be cared for.—July 1.

OBSERVER.

#### DISTINGUISHED CORNISHMEN.

SIR,—Mr. Martyn was a gentleman distinguished for ability as a surveyor and draughtsman, he surveyed all the parishes in Cornwall, and delineated an excellent map of the county. The whole occupied him 16 years, but he dying before it was finished the completion devolved on Mr., afterwards the Rev., Malachi Hichens. Mr. Martyn was born at Carharrack, Gwennap. Mr. Hichens was the nephew of Mr. Martyn, and was, no doubt, much indebted to his uncle for the formation of his character, and the early habits of study which he acquired. As Mr. Hichens was one of the brightest ornaments of society Gwennap ever produced, the following notice of him may not be unacceptable:—He was the youngest child of Thomas and Grace Hichens, was born at Little Trevice, and was baptised in the parish church, — 1741. The rudiments of knowledge which he acquired at a neighbouring village school in his infancy he endeavoured to improve after his initiation into early labour at a stamping mill in the vicinity, employing his thoughts and opportunities in increasing his store of information. Bowling was much practised as an amusement when he was young, and when wearied with study he would join his youthful companions in that exercise. But his thoughts were still about the subject of his study, which at that period was chiefly arithmetic; and sometimes, when about to throw the bowl, he would stand still a moment, when the method of working out the question he had previously been studying striking his mind, he would instantly throw down the bowl, run home, work out the question, and return to his associates. This abstraction of mind was frequent also in the midst of his labour, so that his work was neglected, and those early indications of future greatness not being understood he was severely censured, so that "No work, no meat for Malacho," as he was generally called, became a frequent saying. It is related that when he was about 10 years of age he frequently surprised persons by the acuteness of his answers. In reply to a gentleman who asked him how many children they were at home, after a short pause, he answered—

"There are Martin, Tom, and Jan, and Joe, Amos, Dick, and Malacho, Grace is two years older than Martin I ween, And Molly came Martin and Tom between."

These lines describe the order of the general births. Mr. Hichens became an eminent astronomer; his talents and character gained him great respect. He was inducted into the Established Church, and was afterwards the Vicar of St. Hilary, where he died in 1809, greatly lamented.

Joe Hichens, or Joe as he was usually called, was Mr. Hichens's brother, and was remarkable for his ready wit, and were all the instances thereof recorded he would appear, perhaps, little inferior to the famous Killigrew. We give one instance. Joe was a blacksmith, and foreman or contractor for work in the mines. On one occasion his bargain was cut down, and the price so reduced by competition that he wished to get off from it, or get a better price for the work. By the article Joe was bound to find his own coals and iron, and he resolved to make use of this technical error in the wording of the agreement; he, therefore, went all over the mine and collected a large heap of old iron, which was brought into the smithy. He then took a wheelbarrow, and seeing the manager approaching he filled the barrow from the adventurers' coal heap. "How now, Joe," said the agent, "what's this? are you not to find your own coals and iron?" "To be sure I am," said Joe, "and am I not doing so? How can I find coal but where it is? You would not have me steal coals from other mines would you?" And after some altercation Joe obtained a new agreement, and a proper price for the work. — AN OLD READER.

#### RAILWAY TO PERRANPORTH.

SIR,—In the year 1831 a railway from Truro to Perranporth was projected by some gentlemen of Truro—professionals and merchants—to pass by the way of the village of Zelah, and immediately afterwards a competing line was promoted by other gentlemen from Truro via Perran Alms-house to Perranporth. The competition brought both to naught. From that time to the present no proposition for a railway between those places has been before the public. The most eligible of the two lines is that via Perran Alms-house, because the other line involved two inclined planes and two stationary engines. Perranporth is now a popular watering place, and if a railway were laid down connecting it with this city, there is no doubt the place would be increasingly resorted to. I have a plan and section of the line drawn in the year mentioned, which would be useful to anyone desirous of taking up the matter. The gauge of a line in North Wales is only 2 ft., and that is said to answer well, but I should prefer a 3-ft. gauge to that of 2 ft. The site of the line would be near West Chiverton Mine, which mine would of course contribute largely to its maintenance by taking supplies and produce over it. The line could be very cheaply constructed, as there would be very little earthwork necessitated, and the land could be had on easy terms—most of it. If any of your readers are desirous of investing capital in a useful line of railway I can supply all needful information for their guidance.

*Truro, July 9.*

R. SYMONS.

#### CORNISH MINING.

SIR,—Since the great depression in mining much has been written on the subject of proving new ground, and as a practical miner, having had 45 years experience in Italy, Spain, and a part of Germany, as well as in Scotland, North and South Wales, Devon, and Cornwall, I may say that the best run of improved ground that ever I saw is from Camelford to Wadebridge, north and south, and from Simonward to Padstow, east and west; and just in the centre stands one of the best silver lead mines in the county of Cornwall, which ought to have paid hundreds to the shareholders instead of being stopped. Here the question may arise—If Treburgett be as good as represented why is the mine in such an unsatisfactory state? My answer is—not because there is no lead and silver, for there is plenty of that. Not for want of rich ore, for the ore is rich. Not because the ore cannot be dressed, for it can readily be dressed and sent to market. But it may be remembered that when Treburgett was started there was a dressing floor put up, and all the stuff sent on to the floors was dressed, the lead costing about 1s. per ton for dressing, cost including the dressers' wages, but it appears that the right sort of floors was not erected, for within the last five years there has been spent hundreds of pounds in alterations, and in putting up new machinery. This ought to have brought down the dressing cost, but instead of that I have been told that it went up to 2s. per ton. If so I do not wonder that the mine could not pay cost.

Be this, however, as it may, I am confident that Treburgett is one of the best lead mines in England if worked as it ought to be, and although the mine is stopped, and the water in, I believe that from 10,000l. to 12,000l. well laid out will bring the mine into a paying condition. There are other mines about Camelford that will pay also, and I hope the time is not far distant when these will be worked likewise. There are two not far from Treburgett, and if surface indications are to be relied upon, it is certain that they will make good and lasting mines. There is another mine not far from Camelford called Trethin, where they have a splendid lead lode in the adit and I have been told that the company could set tribute if they wished, as there are miners about there who would be glad to have it. There could be nice dressing-floors put in to the east of the water-wheel and crusher that would cost but little. Now, Sir, looking at all these facts one is at a loss to know why Treburgett



is stopped now that the shaft is down to the 100 fm. level. Plenty of ore was raised from the little ground which was opened at the 90, and a more vigorous development would quickly cause Treburgett to vie with the best mines in Cornwall. OBSERVER.

July 9.

#### MINE MEETINGS, AND THE MAKING OF CALLS.

SIR.—In a paragraph of your leading article a fortnight back you very properly called attention to the unsatisfactory state of the accounts in some of the dividend-paying tin mines. I think, however, attention might be usefully called to another class of mines. I allude to those that are in course of development, that are making regular calls, and which may not succeed. I know mines where shares are largely held by persons who are known to have little or no means beyond the value of the shares they so hold; where meetings are held at long intervals, and consequently calls are in arrears for a most unreasonable length of time—in some cases for 18 months or near upon two years—and when if anything happened to cause the mine to collapse or stop, and the shares become valueless, such persons would be utterly unable to pay their arrears of calls, and consequently the burden of payment of debt upon their shares would be imposed upon the other holders, who have the means of paying, ratably and in proportion to the number of shares they might have the misfortune to hold at the date of the collapse. In the case of a cost book mine the remedy is quite easy; if the meetings were held four-monthly, and all the shares forfeited upon which calls remained unpaid for more than two meetings, or (say) eight months, the arrears of calls would be kept within reasonable bounds, and if anything happened to cause the mine to stop those arrears would not be so burdensome if laid upon the other shareholders in the mine. In this way a more healthy state of accounts would exist, and there would be no necessity for merchants who have supplied materials to a mine attending general meetings as creditors (an ominous circumstance, to say the least of it), to say nothing about being enabled to get better value for their money by paying the merchants' bills within a reasonable period.

I have attended ordinary general meetings of mines where resolutions have been passed ordering the next meeting to be held at four months, but where the mine has been allowed to go on accumulating debt for nine or ten months before the meeting so ordered has been held. This I consider very reprehensible, and ought not to be permitted by any committee of management, because there are always some adventurers who go in for the gains, but if a collapse comes they have no means to meet their proportion of loss, and it is thus by law thrown upon others. BEACON.

#### SOUTH DE ERESBY MOUNTAIN LEAD MINING COMPANY.

SIR.—I see a correspondent who signs himself "A Countryman" wishes to know the price of South de Eresby shares in the market. Perhaps I may be permitted to express astonishment at such a question emanating from one who professes invariably to consult the *Mining Journal* on such matters. I cannot suggest to him a better course than that which he invariably adopts. As regards the value of the mine itself, I shall be happy, if "A Countryman" will place himself in communication with me, to supply him with positive evidence of its mineral wealth; and, should he be able to visit the district on or about the 22nd inst., I can furnish him with the permission requisite for him to inspect all the workings. London, July 11. J. SMITH, Secretary.

#### WHEAL AGAR, AND ITS MANAGEMENT.

SIR.—Will any of your numerous correspondents explain why it is that the splendid promises made by the Wheal Agar management are so long in giving any sign of realisation? Where after all these months is the result of the magnificent discovery in the bottom of the mine—the gulf of tin, outdoing even the bottom of Dolcoath—and which it was said was going to be returned with the boldest application of the most approved appliances, by which the tin would be sent from the machine borer to the clean ore bin hopper-wise? As one interested I hope all this is not to turn out over-sanguine hope, large talk ending in small samplings, debit balances, and calls. The gentlemen who have charge of that fine mine must be aware that they have raised grand expectations, and that the eyes of all men of the profession are fixed on them. I wish them all success and the public an early proof of it. THOMAS RICKARD. Orenburg (Russia), June 13-25.

#### PARK VALLEY MINE.

SIR.—Mining for metals in England at the present time is passing through a stage of trouble and anxiety; on the right hand and left we hear of mining companies being wound up, and lead mining alone seems likely to survive the almost general wreck. At such times it is refreshing to get a glimpse of sunshine; it melts the heart that before was callous to all promises and inducements put forth by the more adventurous spirit. Such was my experience last Thursday, when, twenty minutes after leaving the train at Bow, I stood upon Park Valley Silver-Lead Mine. Making due allowance for the exhilarating influence of a walk between the flower and fern covered banks of a Devonshire lane, I felt, as I viewed the commodious and firmly built engine-shed, the fine engine, the pumping and winding gear, the timber in readiness for use, the happy and contented mien of the men—busy as bees—and the hearty good morning which greeted me, that I had got beyond the cloud of uncertainty and non-prosperity into the sunshine of positive success; and from the business-like and masterly manner in which all the above-ground works have been conducted, it is evident to the most casual observer that the engineer has cultivated and followed those minute but most important points which establish the element of prosperity. This opinion was strengthened upon going underground. Lighting a candle, I proceeded alone through the mine, minutely examining every hole and corner; and I marvelled at the richness of the lodes—no seams, but veins, many inches wide, of rich solid lead ore, such as I have never seen in any Devon or Cornish mine before, and this at only a few feet from surface. As I stood at the point where the old workers were driven back by the water, I pictured their doleful faces, as they thought of the rich store left behind for the present company. Carefully put aside in the level I found a nice pile of rich ore, waiting to be hauled to surface; the engineer modestly computes it at about 4 tons; I should say nearer six. The shaft, which is sunk about 10 fms., would delight the heart of any practical miner. Close to the engine-shed there is a convenient space for dressing floors, and ample water for that purpose. I was informed by one of the men that peat from the West of England Compressed Works will be used as fuel, and that will be a considerable saving in cost. Quite lately a company has been formed for the working of this property. The executive are gentlemen of standing and honour, and I have it upon reliable authority that a clause will be inserted in the rules precluding the possibility of any old or outstanding accounts being brought against the shareholders; if such is the case, this and the celebrated Paracombe Silver-Lead Mine are the only two that I am acquainted with governed in the same manner. Speculation always attends mining, but here it is at its minimum—as future success is as near the positive as it can ever attain to in this branch of industry; and the labour of the next few weeks will, in my opinion, increase its value fully six times beyond what it is now selling at. R. J. RUTTER. Exeter, July 11.

[For remainder of Original Correspondence, see to-day's Journal.]

MINERAL WEALTH OF WESTERN AUSTRALIA.—Capt. Hosken, of Ballarat, has just returned from a six months' visit to Western Australia, and he appears to have made good practical use of his time, judging by the specimens he has brought with him, as indicating the valuable mineral resources of that colony. From an interview with that gentleman on Friday, and an inspection of his store, it is apparent (writes the Courier) that there are lead and copper mines near Northampton richer than any yet discovered. He states that there are about ten or twelve mines in work, one of which is turning out considerable quantities of lead ore, which will smelt from 75 to 90 per cent. of lead, while the shipping from Champion Bay, the

nearest port to Northampton, is not sufficient to carry the ore away. Capt. Hosken, in proof of the richness of the ore, has some magnificent specimens, besides white carbonate of lead, red carbonate of lead, as well as copper ore, with which he says the country abounds, but the great difficulties to contend against are the want of carriage and smelting appliances. At present however, a railway is being made from the Bay to Northampton, under the supervision of Mr. Palmer, who was some years since engineer to the Ballarat Water Commission. In addition to his collection of minerals, Capt. Hosken has also brought over a collection of shells, coral, sponges, and other articles, which he will be happy to show to any person who will call upon him at his residence at 15, Bond-street. The captain, we understand, intends, if possible to float a company to work some of the rich mines he has visited, and will in a day or two issue a report of what he has seen during his visit, and his opinion of the country.—Geelong Advertiser.

#### THE PARIS INTERNATIONAL EXHIBITION.

No. IX.

[FROM OUR OWN CORRESPONDENTS.]

In our last we commenced our notice on the South Wales Coal, and we intend to finish in this article if possible. The coal fields of New South Wales, and exhibits relating thereto, next claim our attention. The area of the carboniferous measures has been stated to be 23,950 square miles, and on a portion of this area several collieries have been established and opened up, and are in course of profitable working in this colony. By the names of existing places and collieries we clearly trace English North Country and Welsh adventures. Hence we find the names Newcastle, Stroud, and others. The largest supply of coal is obtained in the immediate neighbourhood of Newcastle, and it was here the coal mines were first opened up. As may be expected in new coal fields, the workings have been chiefly confined to those beds of coal near the surface. The greatest depth yet attained in sinking for coal has not exceeded 170 yards. No doubt there are documents in existence, official and otherwise, from which much information could be obtained as to the mineral resources of the colony of New South Wales and the other Australian colonies, but it does not appear that these are accessible to the public, or if any of them are the public does not seem to turn such particulars to profitable account. One would suppose that with all the advantages of such new coal fields as is possessed by New South Wales capitalists would be more inclined to invest in them than in some home collieries, where the depth and other difficulties are so much greater. On looking at the case broadly, it must be apparent that there must be vast tracts of coal and iron ore measures within easy sinking distance. What, indeed is 170 yards in depth compared to that of the English and Belgian coal fields? In most districts the coal crops out on the sides of the hills, but little can be done in the old countries, inasmuch as all the land workings commanded by adits have long since been exhausted. In new districts, however, such as New South Wales, this is not the case, and advantage may be taken by driving tunnels into the sides of the hills, and coal in large quantities obtained by such means at a comparatively small cost. It appears that the cost of mining the coal in New South Wales is from 3s. to 5s. 6d. per ton.

During the years of 1858 and 1859 experiments were made with the New South Wales coal at the Royal Arsenal, Woolwich, and the result arrived at from such trials was that for steam purposes the coal was only about 7 per cent. inferior to the best Welsh coal. For the manufacture of gas it was found capable of yielding upwards of 9000 ft. per ton, with an illuminating power 24 per cent. greater than the English variety, known as Witworth.

The coal of New South Wales has been tried on some of our East Indian railway lines with very favourable results. The authorities of the Scinde Company considered the coal of this colony equal to Welsh coal in all respects, and in some cases it was found the consumption per mile was less. The price of New South Wales coal is, as may be anticipated, considerably below that of the English and Welsh markets.

The Rev. W. B. Clarke, who has done so much in ascertaining the geology and mineral resources of New South Wales, has determined that there are no less than SIXTEEN seams of coal in the upper measures, each seam being more than 3 ft. in thickness. Mr. John Mackenzie, F.G.S., the Government Examiner of Coal Fields, has also estimated that, after allowing for loss and waste in working, one of the seams will yield 84,208,298,667 tons. The outcropping of a seam of coal occurs near Wallerawang, and from trials made this seam of coal has been proved to be 17 ft. 6 in. in thickness. Mr. A. Liversidge, professor of geology at the University of Sydney, recently examined this seam of coal. There is another seam of coal near a place called Stroud, and several trial pits have been sunk on the dip side, which proved the seam to be as much as 30 ft. in thickness, equal to the celebrated ten-yard coal in Staffordshire, by which so many in former times made a fortune. The principal seam from which coal is now obtained in New South Wales is from 8 to 10 ft. in thickness. The quality is exceedingly good, being free burning and bituminous, suitable for household, steam, smelting, gas, and other purposes. The quality may be examined and tested from the exhibits in the Exhibition. It has been reported by Mr. R. W. Moody, mining engineer, that five seams of coal, containing 600 acres, situate on the south-eastern coast, would yield 31,250,000 tons of coal, and that upon an estimated vend of 1000 tons per day this tract would not be exhausted within 100 years.

This estimate was independent of a bed of kerosene oil shale, which was capable of yielding 2000 gallons of refined oil for a period of 72 years. As we have said before advantage can be taken of the hilly character of the ground to drive tunnels for the extraction of the coal. Many of the mountain sides are at a sufficiently high angle to allow of the use of self-acting inclined planes, by which means the coal can be transported from the adit level to lower levels or railways. The coal measures of the western district are as much as 480 feet thick, resting conformably on the marine beds of the lower coal measures. The upper measures are overlaid by more than 500 feet of Hawkesbury sandstone. There have been eleven seams of coal counted in them, the lowest of which is 10 feet thick, and is situated about 25 feet from the marine beds. This seam of coal is worked by the Lithgow Valley, Bowenfels, Eskbank, and Vale of Clwydd Collieries. The seam of coal referred to crops out on the surface on the railway line near Bowenfels. The dip of the seam is slow, being not more than 3° to 5° to the north-east, and is consequently easily worked. It dips under the vast extent of mountain ranges to the north and east, and it will take age of working before it is exhausted. Several seams of canal coal have been found, and the produce of two of them is retorted for the manufacture of kerosene. The thickness of these seams varies from 2 to 5 feet. The Heartley shale yields 160 gallons of crude oil, or 18,000 cubic feet of gas per ton, the illuminating power being equal to 40 candles. In the year of 1833 only the small quantity of 328 tons of coal were raised, but in 1877 it had increased to 1,339,871 tons, the gross value of the last year's production being set down at 832,225l., or at the rate of 11s. 11d. per ton. The production of coal has, therefore, increased very rapidly, but not so much so as we may expect in the future. The colliery district of New South Wales is without doubt a fine field for English enterprise. In the last year named nearly 900,000 tons were exported to the other Australian colonies and New Zealand, to Japan, China, India, Maritus, New Caledonia, and San Francisco. From statistics furnished by the Government we find that up to December 31, 1877, the total production of coal was 17,426,797 tons, being of the value of 9,110,283l., and the petroleum oil shale was 137,299 tons of the value of 371,432l. The former averaged 10s. 6d. per ton, and the latter 2l. 14s. per ton.

In the Exhibition will be found sections of the coal fields worked in the Northern, Western, Southern, and Hunter River coal fields, and also samples from several of the petroleum oil coal. The following are exhibited by the Department of Mines, Sydney:—371, splint coal, from Anvil Creek Colliery; seam 14 ft. 6 in. in thickness. 372, bituminous coal from the Co-operative Colliery, Wallaseid, near Newcastle; seam 10 ft. 2 in. thick, and about 8 ft. 5 in. of it is worked. 373, bituminous coal from Ferndale Colliery, Thighe's Hill, near Newcastle; seam about 12 ft. thick. 374, bituminous coal from Newcastle Coal Company, Burwood, near Newcastle; seam 10 ft. 5 in. in thickness. 375, bituminous coal, Waratah Colliery, near Newcastle; the seam averages 10 ft. thick. 376, bituminous coal, Newcastle Wallaseid Colliery; seam averages 8 ft. 5 in. thickness, 7 ft.

6 in. of it is worked. 377, bituminous coal, Mitchell's Colliery, Four-Mile Creek, near East Matland. 378, bituminous coal, from Duckenfield Colliery, near Newcastle; seam 1 ft. 10 in. in thickness, 5 ft. 6 in. is worked. 379 and 381, from Lambton Colliery and New Lambton Colliery; seam 9 ft. 2 in. thick, 8 ft. 5 in. worked in the former—in the latter the seam is 9 ft. 9 in. thick, 8 ft. 1 in. is worked. 382, splint coal from Greta Colliery, 32 miles from Newcastle; seam 16 ft. 2 in. thick. 383, 384, 385, splint coal from Bowenfels and Vale of Clwydd Collieries. 387, bituminous coal from Bulli Colliery; seam of coal 8 ft. thick. 388, petroleum oil canal coal. 390, splint coal from Nash's; coal 6 ft. 392, splint coal from Lake Macquarie; seam 4 ft. thick. 394, anthracite coal from Readhead, Clarence River; seam 6 in. thick. 395, petroleum oil canal coal, kerosene shale, Newcastle Shale Company's Mine, Murrurundi; yield 17,500 cubic feet of gas per ton. 397, bituminous coal from Brown and Lamb's Mine, Lake Macquarie; seam 14 ft. thick. 402, splint coal from Buckley's Coal Mine, Wallerawang; seam 5 ft. thick. 404, petroleum oil canal coal; the seam of coal is 1 foot 6 inches thick. 405 and 407, bituminous coal from Woodford Colliery and Fitzroy Colliery; the seam at the former is 6 ft. thick, and at the latter 20 ft. thick. 409, semi-bituminous coal from Coal Cliff; seam 5 ft. 6 in. thick. 410, semi-bituminous coal from Osborne Wallaseid Colliery; seam 7 ft. thick. 411, anthracite coal from Fitzroy Iron Company's mine; seam 7 ft. thick. 412, semi-bituminous coal from Mount Pleasant Colliery; seam 7 to 9 ft. thick. 419, petroleum oil canal coal—Kerosene shale—from Heartley Colliery; yield 180,000 cubic feet of gas, or 160 gallons crude oil per ton, from a seam 3 ft. 2 in. in thickness.

Suspended from one of the walls in the western angle of the south-western tower of the Grand Vestibule are a number of natural size sections of coal seams, but unfortunately in some instances they are placed so high as to be valueless to visitors. The following are the principal sections. Natural size seam coal, Upper Hunter district, Sandstone.

Coal	2 ft. 6 in.
Indurated clay	0 3
Coal	3 3
Indurated clay	0 2
Coal	1 6
Stone brand	0 3
Coal	0 6
Stone brand	0 1
Coal	6 0=14 ft. 6 in.

#### Fire-clay and shale.

Worked at Greta Colliery, Anvil Colliery, and Stoney Creek Colliery.

Natural size section, seam of coal, Newcastle district:—

#### Shale and grey post.

Coal	4 ft. 0 in.
Band	0 1
Coal	1 1
Inferior coal	1 0
Coal	0 5
Band	0 1½
Coal	0 10
Coal and band	0 10
Coal	2 2=10 ft. 6½ in.

#### Grey post.

Worked at the Australian Agricultural Company's Colliery, Waratah Colliery, Lambton Colliery, New Lambton Colliery, Co-operative Colliery, Newcastle Wallaseid Colliery, and the Minant and Duckenfield Colliery.

Natural size section seam of coal, southern district:—Grey post; coal, 8 ft. Worked at Bulli Colliery, Osborne Wallaseid Colliery, Mount Pleasant Colliery, Coal Cliff Colliery, and North Bulli Coal Mine Company.

#### Section of coal, Heartley Vale, near Mount Victoria:—

Kerosene shale	0 ft. 4 in.
Black shale	6 to 8 in.
Band	0 ft. 0½ in.
Kerosene shale	3 2
Bottoms	0 10

Worked by the New South Wales Shale and Oil Company (Limited). Steam or petroleum oil canal coal, or kerosene shale, yields 140 to 160 gallons of crude oil per ton, and 16,000 to 18,000 cubic feet of gas per ton.

American Creek, Wollongong:—Kerosene shale, 2 ft. Worked at the Mount Kemba Coal and Sile Company Colliery, Wollongong. Other localities, such as Colley Creek, near Murrurundi; Greta Colliery; Megalong, near Pulpit Hill; Pulpit Hill; Joalja Creek, near Berrima; Bathgate, near Wallerawang; Sugar Loaf; Mount Victoria.

#### Natural size section seam of coal, Hunter River:—

Coars coal	1 ft. 2 in.
Band	0 0½
Coal	1 6
Indurated clay	0 2
Coal	4 5
Indurated clay	0 9
Coal	0 10=8 ft. 11½ in.

#### Sandstone and shale.

Worked at the Woodford Colliery, Tomago Colliery, and Four-Mile Creek Company.

The last is a natural size section of coal, Lake Macquarie:—

#### Grey post and conglomerate.

Coal	2 ft. 3 in.
Band	0 6
Coal	2 0
Band	0 3
Coal	0 7
Band	0 0½
Coal	1 9
Band	0 0½
Coal	1 1
Band	0 0½
Coal	2 0
Coal and stone	0 4
Coal	0 11
Band	0 1½
Coal	2 9
Fire-clay, &c	0 8
Coal and chitter	0 10
Coal	1 2
Cannel coal	1 1
Coal	0 6=18 ft. 10 in.

#### Conglomerate.

Worked at the Wallaseid Colliery, Cardiff Colliery, Australasia Colliery, and Dudley Colliery.

With great difficulty we have been enabled to secure for our readers a copy of the sections, which, as we have said, are suspended at such an height as to be rendered almost useless. They present the following information—Section (the first) showing the strata and seams of coal at Newcastle, county of Northumberland, the Upper Coal Measures of New South Wales, northern district, by Mr. John Mackenzie, Examiner of Coal Mines:—

Feet	Inches	Description of soil.
11	0	Soil and clay
3	0	Coal
2	9	Fire-clay
4	6	Coal
8	4	Dark fire-clay, with ironstone bands
55	7	Sandstone, shale, &c.
1	5	Very hard conglomerate
6	5	Blue shale
1	2	Hard conglomerate [brown conglomerate]
20	0	Hard sandstone, with shale partings, generally a
2	0	White metal
4	6	Coal
2	8	Coal
1	2	Fire-clay
5	6	Coal
4	0	14 ft. of white metal and clay, with glossopteris



condenser in  
minute.  
condenser  
I T

Agar. Mines.	ORE (cwt.)	Amount.	Price.
Basset, Wheal .....	324	1,691 10 0	£4 5 0
Bedford United Mines .....	1267	3,685 11 6	2 18 0
Belstone Mine .....	99	511 0 6	5 3 6
Blacklock .....	115	755 17 6	6 11 6
Brookwood .....	200	877 9 6	3 7 6
Corn Brea Mines .....	556	1,254 5 0	2 5 0
Champion's Ore .....	22	66 0 0	3 0 0
Comfort, Wheal .....	67	310 7 0	4 13 0
Cook's Kitchen .....	6	17 12 6	3 10 6
Crotenay, Wheal .....	76	271 10 0	2 6 0
Crobar, Wheal .....	1063	2,730 12 6	3 11 0
Devon Great Consol .....	9690	24,949 3 0	2 10 6
Dingle's Ore .....	10	30 5 0	3 0 6
Dolcoath .....	16	66 0 0	4 2 6
East Basset .....	6	8 5 0	1 7 6
East Caradon .....	510	1,970 4 0	3 17 6
East Pool .....	1787	5,485 2 0	3 1 6
Edward, Wheal .....	9	18 4 6	2 0 6
Eliza, Wheal .....	50	236 5 0	4 14 6
Friendship, Wheal .....	19	63 16 0	2 18 0
Glen's Copper Mine .....	936	1,848 16 6	3 6 6
Glas-gow Caradon .....	2870	10,007 19 6	3 15 0
Gonamena .....	8	29 4 0	3 13 0
Gt. Crinnis and Carlyon Consol .....	174	815 11 0	4 14 0
Grenville, Wheal .....	20	98 17 6	4 19 0
Gunnis L-like Clitters .....	1958	8,032 4 0	4 2 0
Hington Down .....	2071	4,379 15 6	2 2 6
Killifreth .....	276	1,271 13 6	4 12 0
Levant .....	457	3,371 11 0	7 7 6
Marke Valley .....	43 0	12,564 12 0	2 18 6
Mellencar .....	4587	17,071 10 0	3 10 0
New Cook's Kitchen .....	129	577 10 0	3 13 6
New Hendra .....	3	11 15 6	3 18 6
North Treaskerby .....	165	659 3 0	4 0 0
North Wheal Busy .....	70	359 13 0	5 3 0
Owles, Wheal .....	17	363 0 0	2 17 0
Penberthy's Ore .....	12	34 10 0	2 7 6
Penstruthal .....	133	577 4 0	4 7 0
Phoenix Mines .....	508	1,861 14 0	3 17 0
Poldice .....	26	52 6 0	2 0 0
Prince of Wales Mine .....	263	608 13 6	5 3 0
Robert's Ore .....	14	46 13 6	2 6 0
Rule's Ore and .....	11	33 15 0	3 1 6
Russell, Wheal .....	156	292 19 2	1 17 6
Seton, Wheal .....	3	12 0 0	4 0 0
South Caradon .....	6140	33,023 4 0	5 7 6
South Carn Brea .....	55	231 0 0	4 4 0
South Condurrow .....	78	471 13 0	6 1 0
South Roskar .....	29	126 3 0	4 7 0
South Tolcarne .....	35	52 4 0	1 9 6
South Wheal Crofty .....	1802	3,514 0 0	2 4 0
Stephens's Ore .....	17	12 7 6	0 14 6
Sturdivant .....	42	38 3 0	9 3 0
Tavy Consols .....	42	119 3 0	2 16 6
Trefry's Regulus .....	27	210 12 0	7 15 6
Treleigh Wood .....	8	20 0 0	4 0 0
Tywarnhale .....	40	47 0 0	1 2 6
Uny, Wheal .....	8	19 4 0	2 8 0
Unity Wood Mine .....	14	45 17 6	3 5 6
West Basset .....	134	539 5 0	4 0 6
West Eliza .....	7	50 19 6	7 5 6
West Goldolphin .....	90	414 8 6	8 12 6
West Maria and Fortescue .....	726	1,529 10 6	3 2 6
West Poldice .....	63	295 17 6	3 11 6
West Roskar .....	106	201 6 0	1 18 0
West Wheal Tolgus .....	4179	25,541 5 6	6 2 0
West Wheal Beton .....	2618	10,516 9 6	4 0 6
WALES.			
Alcontin Ore .....	114	£ 946 19 0	£8 6 0
Algerian Ore .....	1213	5,045 1 0	4 3 0
Ditto Preclp. and Residues .....	128	416 14 0	3 5 0
Ajstrel Ore .....	2820	7,058 13 0	2 10 0
Almodovar Ore .....	257	2,450 4 0	9 11 0
Assheton Ore .....	16	62 0 0	3 17 6
Australian Ore .....	31	398 11 0	9 8 6
Berehaven .....	2533	13,932 12 6	5 10 0
Bigs Cove .....	184	83, 80 0	14 14 6
Boghale Ore .....	60	883 10	
Burnt Ore .....	436	264 7 6	0 12 0
Cambrian Ore .....	116	1,113 5 0	9 11 6
Cape Ore .....	2523	47,431 9 6	18 16 0
Carraedo .....	1175	6,173 14 0	5 5 0
Cavera .....	3759	13,975 1 6	3 14 6
Constantine Ore .....	69	438 19 0	7 2 0
Copper Matte .....	20	147 9 0	7 7 0
Copper Ore .....	596	4,444 16 0	4 19 0
Copper Precipitate .....	96	2,262 18 0	2 13 0
Copper Regulus .....	227	4,236 18 0	4 19 0
Copper Slag .....	33	262 5 0	11 6 0
Cropebane Ore & Precipitate .....	1172	1,362 5 0	1 3 0



Laws 7 per cent. (pref.) are scarce and higher, but the ordinary shares offer at 8½, Langdale's 9½, and Newcastle 11½. (8½. paid).

**BERKELEY MINING COMPANY.**—An adjourned meeting of this company will be held on July 15. All operations have been stopped at the mines except the pumping at Donsen Mine, which costs 1000. per month. The directors cannot get the mine sold, owing to the low standard of copper. They have a balance in favour of the company of 7947, besides 200 tons of ore to be dressed for market.

The following calculations show the yield per cent. on money invested at present prices in the shares named, based upon the last average yearly dividends being maintained:—In iron and coal companies, Andrew Knowles and Sons would pay 13½; Antrim, A. 4; ditto, B. 4½; Bolekew, Vaughan, A. 5½; ditto, B. 5½; Charles Caumell and Co., 8½; ditto, 6 per cent. debentures, 5½; ditto, 6 per cent. debentures, 4½; John Brown and Co., 4½; ditto, 6 per cent. (pref.), 5; Parkgate, 3½; Sheepbridge, 7; ditto (new), 6½; Staveley, A. 6½; ditto, B. 5½; ditto, C. 6; ditto, D. 5½; ditto, 5 per cent. (pref.), 4½. In wagon companies, Birmingham would pay 8½; British, 8½; Metropolitan, 8½; Midland, 6; North Central, 7½; Sheffield, 7½; ditto, 6 per cent. (pref.), 6; and Yorkshire, 7½. Great Laxey Mine would pay 10½, and St John del Rey 11½. In miscellaneous investments, Earle's Shipbuilding would pay 7½; Lawe's Chemical, 7 per cent. minimum (pref.), 7; Milner's Safe, 5½; and Val de Travers Asphaltum Paving, 7½.

**CAMBRIAN MINING COMPANY (Limited).**—This company's property, which is situated in a capital district in Cardiganshire, is now being vigorously developed. In one portion of the mine, from a small extent of which a vast amount of lead was got many years ago, they are again trying to obtain similar riches, so far with no great results. In the other mine, however, which in addition to lead contains copper, a good course of the latter has been discovered, supposed to be of great extent, and sales have been made at high prices for the produce. The mine would require to come fully up to the most reckless predictions of its probable profits before investors in the shares would make much of it. The capital is 100,000 £, nominal, which is not in accordance with the actual value of the property in its present state of development. Besides, the shares are being sold at a rise of 50 to 60 per cent. even upon that.

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Per share.	Paid up.	Rate per cent. Previous.	Description of shares.	Last price.
£ 10	£ 8	£ 7	COAL, IRON, STEEL.	
10	10	10	Armiton Coal (Limited) .....	7½
10	10	10	Benhar Coal (Limited) .....	7½
10	10	10	Bolekew, Vaughan, and Co. (Lim.) .....	55½
10	10	10	Cairntrout Gas Coal (Limited) .....	8
10	10	10	Chillingham Iron (Limited) .....	45½
23	20	10½	Dec 1874, Ebbw Vale Steel, Iron, and Coal (Lim.) .....	8
10	10	10	Fife Coal (Limited) .....	70½
10	10	10	Glasgow Port Washington Iron & Coal (L) .....	42½ 6d.
10	10	10	Ditto Prepaid .....	40½
10	10	10	Lochore and Capleirae (Limited) .....	80½
10	10	10	Marbella Iron Ore (Limited) .....	60½
10	10	10	Monkland Iron and Coal (Limited) .....	65½
10	10	10	Ditto Guaranteed Preference .....	65½
10	10	10	Nant-y-Glo & Blaenau Ironworks (pref. (L) .....	19
100	100	100	Oman and Cleland Iron & Coal (L. & Red.) .....	9½
1	1	1	Scottish Australian Mining (Limited) .....	37½ 6d.
1	1	1	Ditto New .....	15½
1	1	1	Shotts Iron .....	91
100	100	100	COPPER, SULPHUR, TIN	
4	4	4	Canadian Copper and Sulphur (Lim.) .....	5½
10	7	57½	Cape Copper (Limited) .....	30½
1	1	1	Glasgow Caradon Copper Mining (Lim.) .....	2½
1	15½	7½	Ditto New .....	15½
10	9½	10	Huntington Copper and Sulphur (Lim.) .....	24½
25½	23½	—	Kaunda Mining (Limited) .....	15
4	4	4	Panulicite Copper (Limited) .....	80½
10	10	10	Rio Tinto (Limited) .....	20½
10	10	10	Ditto, 7 per cent. Mortgage Bonds .....	15
100	100	100	D. 6 p. Cent. Mor. Deb. (Sp. Con. Bds.) .....	66½
10	10	10	Thariss Copper and Sulphur (Limited) .....	24½
10	7	22½	Ditto New .....	16½
1	1	1	Yorke Peninsula Mining (Limited) .....	5½
1	1	1	Ditto, 15 per cent. Guaranteed Pref. .....	20½
1	1	1	GOLD, SILVER.	
1	1	1	Australian Mines Investment (Limited) .....	8½
5	5	7½ 6d.	Richmond Mining (Limited) .....	12½
10	7	6	Dalmeny Oil (Limited) .....	8
1	1	1	Oakbank Oil (Limited) .....	42½ 6d.
1	5½	25	Ditto .....	12½
10	10	7½	Uphall Mineral Oil (Limited) "A" .....	9/3 9d.
10	10	10	Ditto "B" Deferred .....	10
10	10	10	West Calder Oil (Limited) .....	40½
10	8½	17½	Young's Paraffin Light & Mineral Oil (L) .....	14/13 9
50	25	5	MISCELLANEOUS.	
7	7	15	London and Glasgow Engineering & Iron Shipbuilding (Limited) .....	24½
10	10	6	Phospho Guano (Limited) .....	12
10	4	4	Scottish Wagon (Limited) .....	82½ 6d.
10	4	4	Ditto New .....	82½ 6d.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.  
Post Office Buildings, Stirling, July 11.

### THE COMSTOCK BONANZAS.

#### THE DEPRESSION OF MINING SALES ON THE PACIFIC COAST.

The principal brokers and mining men of position congregated nearly every evening at the Palace Hotel, San Francisco, and most of the current mining topics are discussed. There I met Mr. James G. Fair, who has been the successful superintendent of the two richest mines in the world, and who, in fact, made the fabulous fortunes of Flood and O'Brien. I pronounced to Mr. Fair the following questions: "I believe, Mr. Fair, your name and mines appeared some three years back, in a pamphlet published by Baron Albert Grant, in a defence he made of the sale of the Emma Mine? Your name was signed under a report, or opinion, as to the Emma Mine, and you spoke of the great future of that mine, provided it was properly worked?" His answer was: "I did give my opinion over my signature, and I remember seeing it afterwards in print. I fully authorised Baron Grant to make use of my views. I then said: 'I have never met or spoken to Baron Grant. He used my name without my authority. I was absent in Peru at the time. He not only published my views on the Emma Mine, in his pamphlet, but likewise had 5000 copies of my own Emma pamphlet republished and circulated, in which I alluded to the great riches that would be produced by the bonanza mines. On page 7, you will find what I stated was being done by Americans on their mines on the Comstock—especially the Consolidated Virginia Mine. My prediction, four years back, as found in the pamphlet, of the dividends of the Consolidated Virginia, have been verified, and astonished the world—for they have turned out beyond everybody's expectation."

Mr. Fair continued: "It is a sad thing to see how fearfully mismanaged most English mining companies have been in the United States. When they do get a good mine they squander over it like Kilkenny cats, and the profits go in lawsuits. For example, the Emma, Flagstaff, of Utah, and the Richmond in Nevada." "Mr. Fair," I said, "in England the public have the idea that only bad properties have been offered to them by Americans, and they consider this to be the reason why nearly all their mining ventures in the United States have had a disastrous result. I myself offered them several properties in 1871, at bed-rock prices. First, the very mine you name, the Flagstaff, which I offered to them for 12,000 £, sold six months afterwards for 300,000 £. The Ontario also for 500,000 £, which having produced monthly dividends of from 50,000 £ to 100,000 £ for some time to come. I offered the No-Yu Don, alias Telegraph Mine, in Utah, for 40,000 £. It has produced 1,600,000 £ in dividends, and is still very rich. Also the Yosemite Mine, in that Territory, for 12,000 £, which has also produced over 60,000 £ to its owner, the deceased Colonel W. Johns."

"I was lately sent out to report on two broken down English companies in Alpine county. I advised them to move one of their mills to Columbia district, as Bodie, where I could have got them a mine with 400 tons of ore in sight, and could have made a great success of them. But John Bull is very obstinate, and will not follow the advice of experienced men. All he does is to grumble at his bad luck—crying over spilled milk, instead of making a good bargain so as to get out of his troubles."

Mr. Fair rejoined: "I imagine that English people are under the erroneous idea that we make our mines pay because they were originally rich from the surface downward; and that all we have to do is to blast out the rock and mill it. Why you may not be aware of the perseverance I had to exercise before producing the millions upon millions of dollars out of our now two celebrated mines. I had to sink a shaft 1200 ft. without a trace of ore in sight anywhere, and then I followed a small cleavage, ½ in. thick, for 420 ft., before I ever got a trace of silver. I said, 'Mr. Fair, I alluded to this fact on page 8 of the Emma pamphlet, especially about the mine under your management, and the enormous sums laid out, and the amount of work done, without a trace of ore; and that you were nearly two years before getting any ore. My British countrymen would like to have the 200,000 £ you have taken out of the earth, but they only believe in the old Cornish saying, that 'Miners cannot see beyond the end of their pick.' Of course I know this to be a fallacy. In my long experience of mining all over the world I have seen mining men, like yourself, who have the intuitive idea which by long experience teaches them to state pretty clearly where a body of ore is to be found. It is true many fail, not from want of an intimate knowledge of the business, but because we find very few plucky people, like the Comstockers and Californians, who will back an experienced miner with the necessary means to prove himself right. Your people backed you with enormous sums of money, and you also had their sympathy, consequently you had success."

"The misfortune of mining men is that they are expected to work miracles, and, in most cases, without the means allowed to civil engineers and other professions, who fall so often with means, whereas the miner has to make a success

with paltry means and under great difficulties which few outsiders can comprehend. A civil engineer may make mistakes; over estimate his outlay and returns; he may plan a railway and report the construction to cost \$5,000,000, and nothing is thrown in his face if it costs \$10,000,000. And it should not pay, as it may do so ultimately, every allowance is made for him. No railroad paid dividends for the first ten years in England. Everybody was ruined by them—and yet civil engineers were not abused. The Great Eastern steamship was a failure, and many other such enterprises. But was betide the mining man who makes a mistake as to a mine. No allowance is made for him: he has to make his calculations often without even being able to reach or get at positive facts, and difficulties meet him at every point and turn. He has to grapple with the dark mysteries of creation, and often is forced to guess against them. With him it is groping in the dark—yet, if he makes a mistake he is branded as an impostor, cheat, &c., &c. Ours is a hard life, and only among ourselves do we comprehend the iron will and perseverance required to keep even one's head above water at times."

### THE INFLUENCE OF THE STOCK EXCHANGES OF THE WORLD ON MINING—LEGITIMATE MINING.

Mining certainly for some time has been greatly benefited by these institutions, but in the long run they have injured the legitimate interests of mining. They have tended to exaggerate the prices of mines in such manner that inflations followed by reactions are the order of the day, thus causing a distrust of mines and mining men, and in fact killing the mammoth goose which has always laid golden eggs for them.

When mining was carried on by the old Spaniards in Mexico and other South American countries it was done for a legitimate purpose, that of making the mines produce, and they did produce, untold riches. Great works were carried out in the Andes in Peru, Mexico, and Bolivia, against immense difficulties, without roads or steam power—all by the mining man with a production of over \$1,000,000,000. The miner although often abused, has been the civiliser of the world, for without the precious metals we would be no better than a savage at present. Then the mining man he stood well; was respected everywhere, and honoured by kings with titles of nobility. He had the sympathies of everybody, allowances were made for his mistakes, and his actions were not prejudged. The difficulties he had to contend with were thoroughly understood. However I believe the time of inflated mining stocks is pretty well passed all over the world. It is no longer easy to float a mine anywhere at present, unless it is sound. This circumstance will bring on a reaction in favour of legitimate mining. The true miner must come to be appreciated, his experience valued, his report believed in, and he will be looked upon as a respectable member of society.

315, Pine-street, Room 31, San Francisco. HENRY SEWELL, M.E., F.R.G.S.  
—Mining Record (New York), June 20.

### Registration of New Companies.

The following joint-stock companies have been duly registered:—

**CWM BRWYN LEAD MINING COMPANY (Limited).**—Capital 30,000 £, in 24 shares. To purchase from F. Sheard Michael Underwood the lease of mines known as Cefn Cwm Brwyn, in the parish of Llanbadarnfawr, Cardigan, containing about 325 acres. The subscribers (who take one share each) are—P. Harris, 14 and 15, St. Swithin's Lane, engineer; A. V. Popham, 18, Great St. Helen's, ship insurance broker; J. John Jones, 63, Grove-road, Highbury, mortgage broker; M. H. Tilly, 37, Queen Victoria-street, accountant; T. H. Barker, 3, Hazelmere-road, P. C. James Woodhead, 27, Queen-street, E.C., cashier; W. Wheldon, 28, St. Martin's Lane, engineer. The directors are not yet appointed.

**DARWEN IRON COMPANY (Limited).**—Capital 30,000 £, in 1000 shares. To acquire works at Darwen now held by Thomas Storey, and to carry on business as ironmasters, colliery proprietors, &c. The subscribers (who take one share each) are—Thomas Storey, Westfield, Lancashire, merchant; W. Storey, Fairfield, Lancashire, manufacturer; George Burgate, Greystone, Dilton-in-Furness; J. Lancaster, Over Darwen, engineer; H. L. Storey, Morecumb, manufacturer; J. Storey, Moorside, chemist. The directors are not yet appointed.

**METROPOLITAN LAND AND HOUSE COMPANY (Limited).**—Capital 50,000 £, in 100 shares. To carry on the general business of a land and building company. The subscribers are—W. Berrell, Woodthorp, Beulah Hill, 25; G. Berry, Motcombe-street, Belgrave square, 25; J. U. Bloer, 19 and 20, King street, 25; W. S. Cross, 53, Charing Cross, 25; H. W. Manning, Westmoreland Road, Middlesex, 25; J. T. Haney, 14, Sloane-street, 25; R. J. Palmer, Great Winchester-street, 5.

**YERWA ESTANCIA COMPANY (Limited).**—Capital 50,000 £, in 500 shares. To acquire and carry on the establishment called the Yerwa Estancia, Concordia, Entre Rios, Argentine Republic, and to import and export live and dead stock, &c. The subscribers (who take one share each) are—Ellen Ann C. Steward, Greenhays, Manchester; E. McLean, Manchester; James Parlane, Rushmore; R. Macalister, Beech Lane, Wavertree; Charles England, Leeds; C. J. Hall, 23, Fountain-street, Manchester; E. McLean, Plymouth Grove, Manchester.

**CROWN SHIPBUILDING COMPANY (Limited).**—Capital 25,000 £, in 1000 shares. To carry on the general business of a shipbuilding company. The subscribers are—John Bent, Ridley-place, Blythe, 5; R. Bent, Newcastle-on-Tyne, 7; Walter Fletcher, Waterhead, Ambleside, 10; W. E. Barrett, Kersal, Manchester, 10; R. B. Langridge, Alderley Edge, 10; R. Darby, Blythe, 10; John Dent, jun., Blythe, 10.

**BELL LUNCH COMPANY (Limited).**—Capital 30,000 £, in 50 shares. To acquire letters patent for improvements in punching, registering, and alarm apparatus for tickets. The subscribers (who take one share each) are—J. M. Gillows, Thatched House Club; J. W. Greig, 15, Ellington-street; Frank H. Baxter, 35, Grosvenor road; G. H. Smith, 17, Highbury New Park; C. B. Smith, 17, Highbury New Park; George Exell, 11, Baxter road, Islington; Albert Marley, Lincoln's Inn Fields.

**METROPOLITAN FIRE OFFICE (Limited).**—Capital 20,000 £, in 100 shares. To carry on the general business of a fire insurance company. The subscribers (who take one share each) are—F. R. Harold, 12, Landis-war-road, Upper Holloway; F. Pertwell, 145, Fenchurch street; C. Simpson, Ballard-lane, Finsbury; H. E. Trent, Petherton road, Canonbury; C. Musprett, 16, York-street, Covent garden; T. M. Wescott, Sidney street, King's Cross; A. A. Aquilar, 5, City-road.

**PEYTON AND PEYTON TUBE COMPANY (Limited).**—Capital 0.0 £, in 10,000 shares of 5 £ each. The proposed first issue is 5000 shares, on which 2 £ per share is to be paid on application and 1 £ on allotment. The object of the company is to bring into practical operation a patented invention of Messrs. Edward Peyton and John H. Peyton, consisting of improvements in the machinery for the manufacture of welded and other wrought iron, steel, and other metal tubes, by means of which the iron strip, taken direct from the furnace, is converted into a tube at a single operation, instead of having to be heated and reheated many times as under the ordinary process. By means of this machinery it is stated that 50 per cent. more tubes can be produced in a given time, with a saving of 12½ per cent. in coal and 55 per cent. in wages. The company, it should be stated, has no connection with the business carried on by Messrs. Peyton and Peyton as bestial manufacturers, at Bordesley. The directors are—Messrs. Richard Peyton, John Satchell Hopkins, Arthur Winkler Wills, Edward Peyton, and Henry Eagles, the two last named being managing directors.

**WITHERS AND DOCK COMPANY (Limited).**—Capital 40,000 £, in 100 shares. To construct fishing docks at Withersand, York. The subscribers are—Thomas Hardy, Withersand, 100; Joseph Chapman, Grimshy, 50; B. Bedell, Kingston upon Hull, 10; G. Eekle, Withersand, 5; R. Palfreman, Kingston upon Hull, 5; J. Hardy, Retford, 5; L. R. Harrington Walker, 5, Sergeant's Inn, Temple, 10.

**ULSTER STEAM TRAMWAYS (Limited).**—Capital 500,000 £, in 50 shares. To construct and maintain or acquire tramways in Ireland. The subscribers are—C. J. Lowe, Greenwich, 50; John Parkinson, 188, Great Dover-street, 5; W. L. Duff, 5, St. Paul's place, Canonbury, 50; J. Wyke, Wansted, 10; D. P. Jones, 12, Leconfield-road, Highbury, 10; G. E. Stoke, 4, Midway-grove, N., 10; T. James, 13, Winton-road, Stoke Newington, 5.

**PRESTON ESTATE COMPANY (Limited).**—Capital 50,000 £, in 100 shares. To take over the interest of the Preston Estate in the land of Preston, Lancashire. The subscribers are—George Davis, Hendon, 100; N. Morgan, the Laurels, East Moseley, 100; E. Laore, 26, Parliament-street, 10; H. W. H. int, 26, Parliament-street; H. C. Forde, Wimbledon, 100; J. Cashel Hoey, 17, Camden Hill-road, 50; J. G. Minchin, Newgate-street.

**CONSOLIDATED MINING COMPANY (Limited).**—Capital 100,000 £, in 10 shares. To acquire the property and assets of the South Aurora Consolidated Mining Company (Limited). The subscribers (who take one share each) are—E. Appleburgh, 15, Angel court, mining engineer; J. T. Berghell, 3, Circus-place, Finsbury, merchant; H. W. Spratt, 16, George street, E.C., architect; R. Towne, 8, Ormonde-terrace, Regent's Park, no occupation; A. G. D. Griffith, 17, Abchurch-lane, clerk; James Morris, Rochester, clerk; G. T. Tip, 10, Clak-lane, E.C., stationer. The directors are—Messrs. H. Appleburgh, J. T. Berghell, H. W. Spratt, R. Towne, the qualification being the holding of shares to the value of 100 £.

**ALEXANDRIA MARKET COMPANY (Limited).**—Capital 25,000 £, in 100 shares. To acquire land known as the General Market, Alexandria. The subscribers (all of Alexandria) are—J. T. Atkin, 1470; C. D. Carver, 250; E. J. Colbeck, 150; W. Magnus, 200; A. Peake, 60; R. Canister, 1030; C. Ruge, 20.

**AUSTRALIAN ICE COMPANY (Limited).**—Capital 12,000 £, in 100 shares. To manufacture ice in Australia. The subscribers (who take one share each) are—C. E. Waldeck, 148 Grosvenor House; T. Davies, 148, Gresham House; T. G. Barrett, 18, New Quebec-street; Thomas Glen, Moulsey; H. Shaw, Nallsworth; J. Sproston, Grosvenor House; W. Bell, 24, Mansfield-road, Dalton.

**OLEOGRAPHIC COMPANY (Limited).**—Capital 10,000 £, in 10 shares. To carry on business as print-sellers, &c.

**PATENTED INVENTIONS COMPANY (Limited).**—Capital 5000 £, in 10 shares. To acquire and obtain, as agents or otherwise, Letters Patent, &c.

**GAS AND WATER COMPANIES' DIRECTORY.**—The second annual issue of the useful little directory—that for 1878—edited by Mr. Charles W. Hastings, of Buckingham-street, Adelphi (Belfast: Marcus Ward and Co., Royal Ulster Works), has now been published, and gives evidence of much care having been taken to correct it to the latest period. The directory contains an alphabetical list of all towns in the

kingdom having gas or waterworks (also of many continental works carried on by English companies), showing the date of formation, mode of incorporation, amount of share capital, names of chairman, engineer, or manager, secretary, lessee, or owners, and a statement as to whether the works have been purchased by the corporation, or is the property of the local board or improvement commissioners. The population of the towns, the distance from London, and the lines of railway on which they are situated are also given, and with regard to gas companies there is valuable information as to price charged per 1000 cubic feet by the various companies. An alphabetical list of all officials facilitates the access to the particulars of the works with which they are connected, and those who are members of the British Association of Gas Managers are specially distinguished. Altogether the volume is excellent, and everyone interested in gasworks should certainly possess it.

### DYNAMO ELECTRIC MACHINES.

A new arrangement has been invented by Mr. S. SCHUCKERT, of Nürnberg, Germany, for producing a number of magnetic fields, across which a conductor of electricity is moved, whereby electricity is generated in said conductor; also in the employment of an iron ring of special construction in the revolving armature. The latter is made out of a number of sheet-iron rings, which are magnetically insulated from each other, which serves to save power and prevent over warming of the ring during working, because in these single sheet-iron rings of but little volume, the pole changing going on with less resistance, the remaining magnetism is more easily destroyed than in a solid iron ring. In the new arrangement of producing magnetic fields a much larger portion of the conductor is brought under the influence of the magnetic fields than is the case in Gramme's machine, in which only that part of the conductor which covers the outside of the ring is brought in the magnetic field, leaving the inside useless for generating electricity; this is accomplished by making the iron ring of special form.

The electro magnets are provided with segmental formed iron pieces which represent the poles. The iron rings (or circular armatures) between them get in consequence opposite polarity, the whole arrangement forming thus four magnetic fields of high intensity, across which the conductor copper wire wound about the iron ring is moved during the action of the machine, and thus electricity is induced in the said copper wire. The induced currents are in one direction, and unite themselves. The generated currents are in the upper part of the ring above the neutral line are opposite to those generated below that line, and would neutralise each other; to prevent this and utilise them they are collected near the neutral points by metallic brushes, touching the cylinder, which consists of a number of insulated metallic pieces, each one connected with a conducting wire coming from the revolving armature.

### HYDRAULIC LIMES AND CEMENTS.

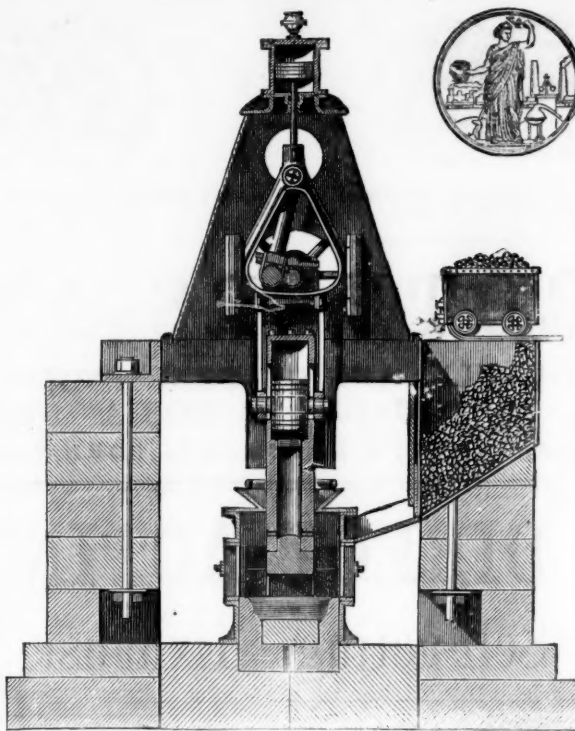
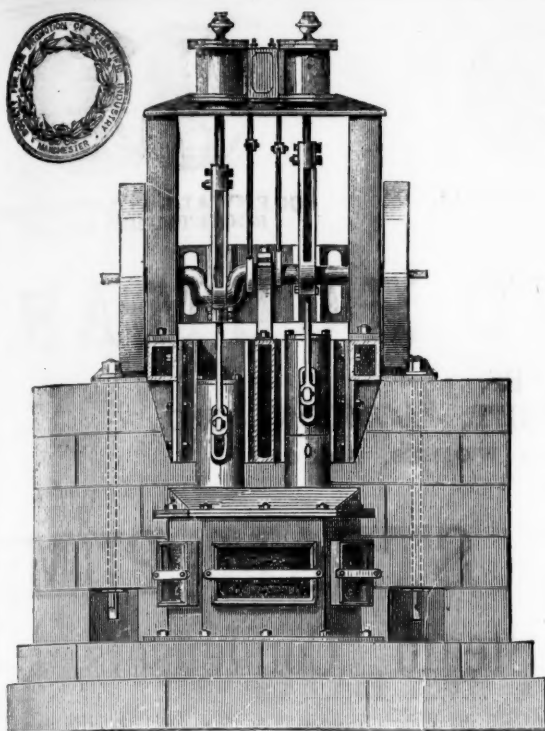
Without entering into a description of the transformations or complex chemical reactions which may be produced in the treatment of cements with acids, Mr. DESIRE MICHEL, of Marseilles, desires more particularly to draw attention to the remarkable results which may be obtained by the employment of his improved process, allowing, as it does, of the manufacture in a certain and economical manner from any description of raw materials, having hydraulic properties of cements and limes which are perfectly hydraulic, will set with mathematical regularity, are absolutely unalterable both before and after use, and of a uniform composition such as can only be obtained with difficulty in cements prepared by the ordinary processes. The improved method of making hydraulic limes and cements is by no means complicated. Instead of keeping down the heat of the kiln in which the materials are calcined within certain limits, he so raises it as to overburn the products. In certain cases he extracts if necessary the first lime which is in excess, and then subjects the nodules and under-burnt remainder to the action of a bath of dilute hydrochloric acid. The proportion of acid will of course vary with the amount of lime contained in the under-burnt portion and nodules, but it would not exceed on an average 3 or 4 per cent. The proportion should, in all cases, be determined with accuracy by a preliminary test and a previous analysis of the raw materials. Hydrochloric acid is employed by preference, but he reserves the right of using any other acid which will yield analogous results. The nodules and under-burnt portion are allowed to effervesce in the acid baths until quite cooled, and are then dried in a furnace until fit for grinding in the ordinary manner.

It should be understood that in manufacturing limes and cements according to this invention Mr. Michel may apply the acid treatment either before or after burning, and either in the dry or humid way, whether such acid be used in the form of a vapour or gas, in the concentrated form or in solution in water, and whether such acid be made to act separately on the minerals or elements of which the limes and cements are composed, or upon the raw material itself. The invention thus consists in the application and employment of acids in the manufacture of hydraulic cements and limes whereby the latter may be over-burnt without injury, and the under-burnt portion and nodules (which in the ordinary process of manufacture are waste and cause considerable loss) are utilized for the manufacture of hydraulic limes and cements of first quality.

**ECONOMIC MANUFACTURE OF WHITE LEAD.**—In order to accelerate the process of manufacture of white lead, Mr. F. Maxwell-Lyte, of Savile-row and Paris, substitutes for the sheet lead now generally employed metallic lead, chemically precipitated as obtained by reducing lead salts by an electro-negative metal, using by preference metallic zinc for this reduction, used in the manner described in his previous patents. Sulphate or chloride of lead is dissolved in acclimated brine or in hydrochloric acid, or the salts may be covered with brine or hydrochloric acid, and in either case when bars or lumps of metallic zinc are placed in the mixture, the salts of lead become reduced to metallic spongy lead, while a proportionate amount of zinc passes into solution. Other salts of lead, such as the nitrate, acetate, &c., may be similarly reduced from their solutions to the state of spongy metallic lead. The spongy metallic lead is placed in chambers, such as those wherein white lead is sometimes manufactured, according to ordinary processes, or in chambers constructed on like principles, and is treated in the manner ordinarily employed for the production of white lead. The lead in this finely divided state, as produced by chemical reduction, he has found to be much more easily acted upon, and to be more rapidly carbonated, than lead in the ordinary state, as hitherto treated. In the reduction of the spongy lead zinc passes into solution in the proportion of about one part of zinc to every three parts of lead reduced, and may be recovered by precipitation as rough oxide in a state fit for distillation and conversion into metallic zinc, observing the proportions recommended in the specifications of previous patents above mentioned. Among other processes for the conversion of the spongy lead into white lead may be mentioned that of wetting the spongy lead with a solution of lead acetate, or of some other salts of lead, and exposing such mixture in a moist state in a chamber to a current of mixed atmospheric air and carbonic acid gas, or to a mixture of oxygen with carbonic acid gas; by such means the metallic lead becomes oxidised, and the oxide thus produced absorbing carbonic acid becomes converted into the basic carbonate—i.e., into white lead.

**Contracts undertaken for the rapid driving of Levels, Headings, &c., by Rock-boring Machinery.**  
APPLY TO—**J. LATHORNE & CO.,**  
63, QUEEN VICTORIA STREET, LONDON.





## SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

**N. HOLMAN AND SONS,**

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, **SOLE MAKERS OF STEPHENS' PATENT PULVERISER.**  
MINING AND OTHER MACHINERY CONSTANTLY ON SALE,  
NEW AND SECOND-HAND.

### BICKFORD'S PATENT FOR CONVEYING CHARGE IN



### SAFETY FUSE FIRE TO THE BLASTING ROCKS, &c.

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the "IMPERIAL EXPOSITION," held in Paris, in 1865; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Antwerp, in 1868; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna, in 1873; and at the "EXPOSICION NACIONAL ARGENTINA," Cordeva, South America, 1872.



**BICKFORD, SMITH AND CO.,**  
OF TUCKINGMILL, CORNWALL; ADELPHI  
BANK CHAMBERS, SOUTH JOHN-STREET, LIVER-  
POOL; and 85, GRACECHURCH-STREET, LONDON,  
E.C., MANUFACTURERS AND ORIGINAL  
PATENTEES OF SAFETY-FUSE, having been in-  
formed that the name of their firm has been attached to  
fuse not of their manufacture, beg to call the attention of  
the trade and public to the following announcement:—  
EVERY COIL OF FUSE MANUFACTURED BY THEM HAS TWO SEPARATE  
THREADS PASSING THROUGH THE COLUMN OF GUNPOWDER, and BICK-  
FORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS AS  
THEIR TRADE MARK.

**ELECTRIC BELL SIGNALS FOR COLLIERIES,  
FACORIES, WAREHOUSES, &c.,**  
WITH OR WITHOUT GALVANIC BATTERIES.  
NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE  
ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES OF  
TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.  
For estimates and particulars apply to—  
**SYDNEY F. WALKER,**  
LATE G. E. SMITH,  
TELEGRAPH ENGINEER,  
COMMERCIAL BUILDINGS, LONG ROW NOTTINGHAM

IMPROVED IRON

**SMITH'S**

**HEARTH.**

NO BRICKWORK

REQUIRED.

PRICES FROM

CAN BE TAKEN DOWN

£6.15. NETT.

& SET UP AGAIN

FREE ON G.N.R.

IN 1/2 AN HOUR.

GILDERSOME.

R. HUDSON.

GILDERSOME FOUNDRY,

NEAR LEEDS

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

GILDERSOME.

GILDERSOME FOUNDRY,

## THE "Cranston" Rock Drill

IS DRIVING LEVELS 200 LINEAR FEET PER MONTH  
IN HARD QUARTZ ROCK. "EBERHARDT" TUNNEL  
NOW DRIVEN IN OVER 3578 LINEAR FEET WITH  
THESE DRILLS AND COMPRESSORS.



CAN BE SEEN IN DAILY PRACTICAL OPERATION  
DRILLING 80 FEET OF BLAST HOLES PER DAY IN  
LIMESTONE ROCK AT ONE-FIFTH THE COST OF  
HAND LABOUR.

For other particulars and prices, apply to—

**J. G. CRANSTON,**  
22, Grey-street, Newcastle-on-Tyne.

### WIRE ROPES.

**JOHN AND EDWIN WRIGHT,**

PATENTERS,



ESTABLISHED 1770.

**MANUFACTURERS OF EVERY DESCRIPTION OF  
IMPROVED**

**Patent Round and Flat Wire Ropes,**

From the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire,  
Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope  
Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the  
best Patent Improved Steel Wire.

**PATENT ROUND AND FLAT HEMP ROPES,**  
Hemp, Flax, Engine Yarn, Cotton Waste, Tarpaulling, Oil Sheets, Brattice  
Cloth, Wagon Covers, &c., &c.

**UNIVERSE WORKS, MILLWALL, POPLAR, LONDON.**  
**UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.**  
**CITY OFFICE, No. 5, LEADENHALL STREET, E.C.**

All communications to be forwarded to the BIRMINGHAM ADDRESS.

PATENT

## "INGERSOLL ROCK DRILL,"

LE GROS, MAYNE, LEAVER, & CO.,

60, Queen Victoria Street, London, E.C.

5, PARK PLACE, NEW YORK, U.S.A.



We claim 40 per cent. greater effective drilling power, and offer to compete with any machine of its class.

The following extracts from the reports of Judges in awarding Medals:—

"2. Its simple construction ensures durability, &c."

"4.—The steam or

air cushions at each end of cylinder effectually protect from injury

"5. Its having an automatic feed, giving it a steady motion, &c."

"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c."

"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues Price Lists, Testimonials, &c., as above.

THE

## DARLINGTON WAGON COMPANY,

MANUFACTURERS OF

### RAILWAY WAGONS

OF EVERY DESCRIPTION,

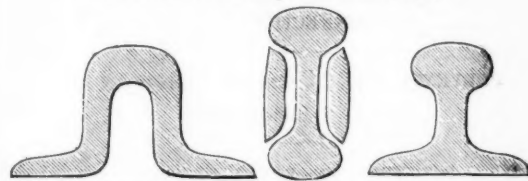
For Cash, or on Deferred Payments, or Hire.

REPAIRS EXECUTED WITH DESPATCH, ON REASONABLE TERMS.

OFFICES AND WORKS.

**ALBERT HILL, DARLINGTON.**

**JOHN BEATSON AND SON,**  
IRONGATE, DERBY.



**IRON AND STEEL RAILS**, of all sections, from 10 to 82 lbs. per yard, new, defective, or second-hand.  
**POINTS AND CROSSINGS, FISH PLATES, BOLTS, NUTS, CHAIRS, AND SPIKES.**

**DERBYSHIRE, YORKSHIRE, HEMATITE, SCOTCH, AND COLD-BLAST PIG-IRON.**

**STEEL AND MALLEABLE IRON**, of all qualities and sections.  
Delivered at all Ports and Railway Stations in Great Britain.

### ASBESTOS.

A NEW and INDESTRUCTIBLE ASBESTOS PACKING for steam joints and glands, possesses an unusual power of resisting heat, works efficiently under the highest pressure of steam, being practically indestructible. Apply to—

**THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),**  
31, ST. VINCENT PLACE, GLASGOW,  
AND 10, MARSDEN STREET, MANCHESTER.

**THE TAVISTOCK IRONWORKS, ENGINEWORKS  
FOUNDRY, AND HAMMER MILLS,**  
TAVISTOCK, DEVON.

**NICHOLLS MATHEWS, AND CO.**  
ENGINEERS, BRASS AND IRON FOUNDERS,  
BOILER MAKERS AND SMITHS.

**CORNISH PUMPING, WINDING, AND STAMPING ENGINES; STEAM  
CAPSTANS AND CRUSHERS; WATER-WHEELS; PUMP-WORK;  
SHOVELS, AND HAMMERED IRON FORGINGS OF EVERY  
DESCRIPTION.**

Also of SPUR, MORTICE, MITRE, BEVIL, and other WHEELS, of any diameter up to 12 feet, made by Scott's Patent Moulding Machine, without the aid of patterns, and with an accuracy unattainable by any other means.  
**MACHINERY or FOREIGN MINES** carefully prepared.  
**SECOND-HAND MINING MACHINERY**, in good condition, always on sale, at moderate prices.

**BENNETTS' SAFETY FUSE WORKS,**  
ROSKEAR, CAMBORNE, CORNWALL.

**BLASTING FUSE FOR MINING AND ENGINEERING  
PURPOSES.**

Suitable for wet or dry ground, and effective in Tropical or Polar Climates.

**W. BENNETTS**, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of his own manufacture, of best quality, and at moderate prices.  
Price Lists and Sample Cards may be had on application at the above address.  
**LONDON OFFICE—H. HUGHES, Esq., 45, GRACECHURCH STREET**

DEBILITY AND NERVOUSNESS.

Free Edition, 162 pages, post free, in envelope, two stamps. The  
**WARNING VOICE.**—A Special Medical Book for Young Men, on the Cause, Consequence, and Treatment of certain forms of Debility and Nervousness, viz.—Mental and Physical Depression, Palpitation of the Heart, Noises in the Head and Ears, Impaired Sight and Memory, Indigestion, Pains in the Back, Headache, Piles, Constipation, Hysteria, Dizziness, Local Weakness, Muscular Relaxation, Nervous Irritability, Blushing, &c., resulting from Exhaustion of Nerve Power, effect of Overwork, City Life, Worry, Brain Toll, Intemperance, and other abuses of the system.  
Address, Dr. H. SMITH, 8, Burton Crescent, London, W.C.





PARIS INTERNATIONAL EXHIBITION, 1867.



VIENNA INTERNATIONAL EXHIBITION, 1873.



LONDON INTERNATIONAL EXHIBITION, 1874.



CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

# TANGYE BROTHERS AND HOLMAN,

HYDRAULIC AND GENERAL ENGINEERS,  
CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,  
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

## The "SPECIAL" DIRECT-ACTING STEAM PUMP, WITH Holman's Patent Self-acting Exhaust Steam Condensers.

UPWARDS OF 12,000 "SPECIAL" STEAM PUMPS ARE IN USE.

After eight years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once the simplest and most certain in action. There is absolutely no extraneous gear, and the steam cylinder is no longer than the pump. The valves are of easy access, and are suited for pumping fluids and semi-fluids of almost any consistency.

### Holman's Condenser

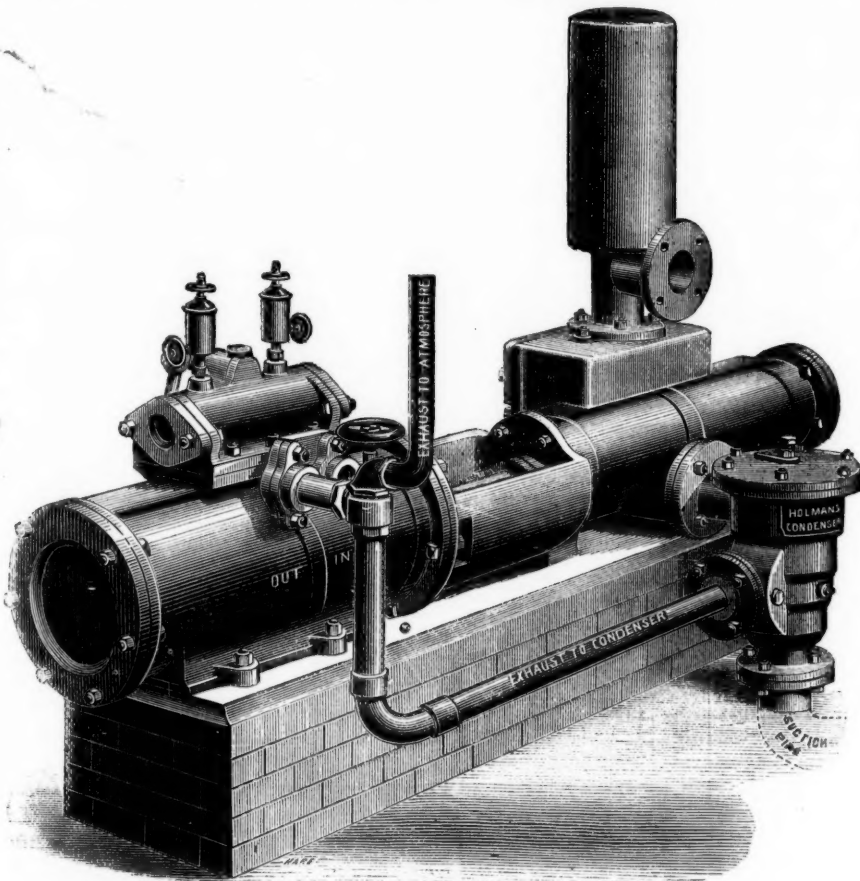
Turns waste steam into  
GREAT POWER.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

SAVES TWENTY TO FIFTY PER CENT. OF FUEL.



WILLIAM ELLIOT, Esq., of the Weardale Iron and Coal Company, writes under date Sept. 17th, 1875, as follows:—"We have now THIRTY-FIVE of your SPECIAL STEAM PUMPS in operation at the various collieries under my charge—some of them employed pumping water out of our pits to the depth of 50 fms.—others employed in the pits, and a good many feeding Boilers. I have no hesitation in saying that we have found them the Cheapest and Best Pumps of the kind we have tried. I can with confidence recommend them to intending purchasers."

Messrs. BURT, BOULTON, and HAYWOOD, Chemical Manufacturers, of London, have FORTY of the "SPECIAL" STEAM PUMPS in use at their works.

### HOLMAN'S CONDENSERS

Are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

In Mining operations these Condensers will be of great value.

All Boiler Feeders are recommended to be fitted with these Condensers, as not only is the exhaust steam utilised in heating the feed water, but is returned with it into the boiler.

## GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	8	9	9	9	9	10	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	4	5	6	7	8	5	6	7	8	9	10
Length of Stroke ...In.	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	30
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,500
Price of Special Pump ...£	16	18	20	25	22 10	27 10	32 10	25	30	35	40	30	35	40	45	50	40	45	50	55	65	50	55	60	70	85
Extra, if fitted with Holman's Condenser and Blow-through Valve	£7	£7	£9	£11	£8 10	£11 10s	£12 10s	£9	£12	£15	£15	£10	£13	£15	£16	£22	£13	£16	£16	£22	£22	£16	£16	£23	£24	£35

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18
Diameter of Water Cylinder..In	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14
Length of Stroke .....In	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000
Price of Special Pump..£	65	75	90	100	75	80	85	110	120	140	110	120	130	140	160	180	140	150	160	180	200	180	190	210	230
Extra, if fitted with Holman's Condenser and Blow-through Valve	£23	£24	£35	£35	£20	£27	£27	£38	£38	£50	£28	£28	£40	£40	£55	£55	£28	£40	£40	£55	£55	£45	£45	£56	£66

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of sections and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

### The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch Strokes.

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:—

NORLEY COLLIERY, WIGAN.

Messrs. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economic sense, a most valuable feature in the drainage of underground work-

ings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10½ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 64 strokes (168 feet) per minute, the steam gauge

indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the mine, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be recovered in a very short time. (Signed) J. THOMPSON

NORTH OF ENGLAND HOUSE  
SOUTH WALES HOUSE...

TANGYE BROTHERS AND BAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.  
TANGYE BROTHERS AND STEEL, Tredgar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA

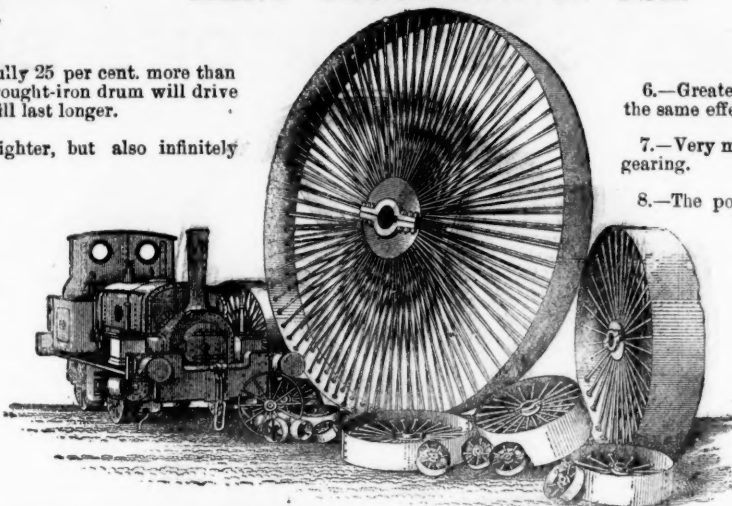


# Great Economy for Millowners! Belting versus Gearing.

Drive your Shafting with Rodgers's Patent Wrought Iron Drums, instead of Gearing.  
MANY THOUSANDS IN USE.

## ADVANTAGES.

- 1.—Leather belts on these drums will drive fully 25 per cent. more than on cast-iron ones—viz., a 6 in. wide belt on a wrought-iron drum will drive as much as an 8 in. belt on a cast-iron one, and will last longer.
- 2.—These drums are not only considerably lighter, but also infinitely stronger than cast-iron ones.
- 3.—In case of damage from Fire they are easily repaired. We have repaired hundreds at a small cost.
- 4.—For MAIN DRIVING purposes they are invaluable, especially in case of a new mill, no expensive ashlar work being required to withstand the jars of costly gearing.
- 5.—The wrought-iron drums and belts cost less and are more easily fixed than gearing.



## ADVANTAGES.

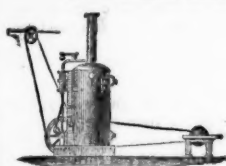
- 6.—Greater economy in steam power, as it requires less power to transmit the same effective force with belts than it does with gearing.
  - 7.—Very much greater economy in subsequent repairs as compared with gearing.
  - 8.—The power is transmitted evenly, faithfully, noiselessly, and without the jar arising from defective or worn gearing.
  - 9.—They require no cases for transport or shipment.
- They can be supplied up to

24 FEET DIAMETER.

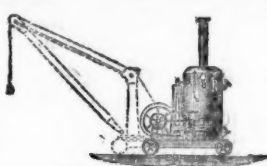
FOR PRICES AND PARTICULARS APPLY TO THE  
SOLE MAKERS,

HUDSWELL, CLARK, AND RODGERS, RAILWAY FOUNDRY, HUNSLET, LEEDS.

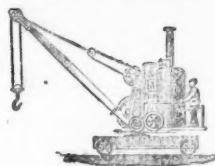
## CHAPLIN'S PATENT PORTABLE STEAM ENGINES & BOILERS.



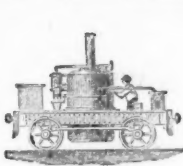
STATIONARY ENGINE.  
No building required.



HOISTING ENGINE  
With or without Jib.



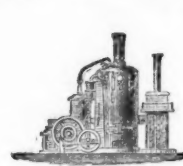
STEAM CRANE.  
For Wharf or Rail.



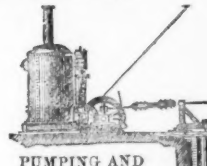
CONTRACTORS' LOCOMOTIVE.



TRACTION AND ROADWAY ENGINE.



SHIPS ENGINE AND DISTILLER.



PUMPING AND WINDING ENGINE.

The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. CHAPLIN in 1855, specially designed and adapted for

Pumping, Winding, Hoisting, Sawing, Driving Machinery, and for General Contractors' Work, Railway Sidings, Coal Mines, Quarries, Gas Works, &c.

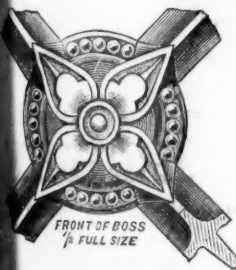
WIMSHURST, HOLLICK, & CO., ENGINEERS, 2, WALBROOK, LONDON, E.C.

WORKS:—REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (Near Stepney Station).

Parties are cautioned against using or purchasing Imitations or Infringements of these Patent Manufactures.

## HARRIS'S PATENT WROUGHT-IRON WINDOWS.

DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



FRONT OF BOSS  
1/2 FULL SIZE

GREAT BRITAIN,  
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER  
THAN ANY OTHER METAL SASHES YET  
PRODUCED—COST LESS FOR GLAZING—  
ARE AS CHEAP IN MANY CASES AS WOOD

Private Houses,  
Parsonage Houses,  
Farm Houses,  
Churches,  
Chapels,  
Schools,

ILLUSTRATED CATALOGUES  
ON APPLICATION.

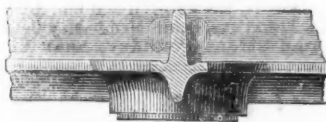
In Basement Storeys and Exposed Positions Shutters  
and Guard Bars are dispensed with.

HOME AND

SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.  
90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

PATENTED IN

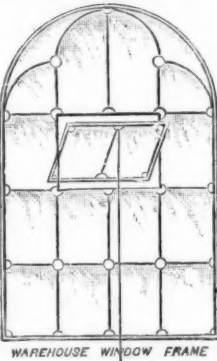


OUTER BAR PLAIN  
FOR CASEMENTS

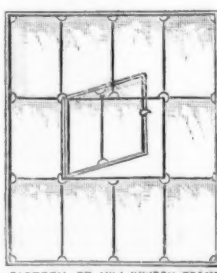
REGATED BAR  
FOR CASEMENTS

REGATED BAR  
FOR CASEMENTS

SECTION OF OUTER  
FRAME OF SASHES  
TO RUN



WAREHOUSE WINDOW FRAME



FACTORY OR MILL WINDOW FRAME

FRANCE,  
GERMANY, AND BELGIUM.

—CAN BE DESIGNED AND MANUFACTURED  
TO SUIT ANY STYLE OF ARCHITECTURE  
OR POSITION WHERE A WINDOW MAY BE  
REQUIRED.

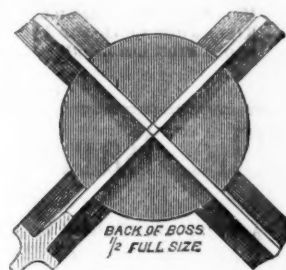
ARE BEING EXTENSIVELY USED IN—

Lunatic Asylums, &c.,  
Public Buildings, Banks,  
Wharves, Warehouses,  
Factories, Mills,  
Breweries, &c.,  
Engine Houses.

ILLUSTRATED CATALOGUES  
ON APPLICATION.

Security is obtained in  
these Skylights with-  
out Guard Bars, and  
with less obstruction  
to Light.

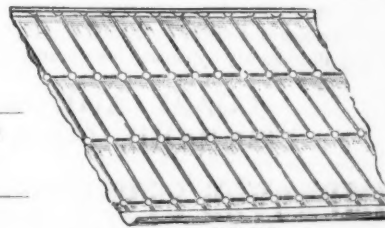
EXPORT.



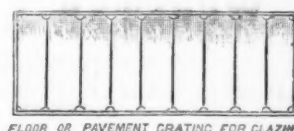
BACK OF BOSS  
1/2 FULL SIZE



RAISED ROOF LIGHT WITH OR WITHOUT VENTILATOR



SKYLIGHT



FLOOR OR PAVEMENT GRATING FOR GLAZING

## THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL SHEAR, BLISTER, & SPRING STEEL  
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.  
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—90, CANNON STREET, E.C. PARIS DEPOT.—12, RUE DES ARCHIVES.  
NEW YORK STORE.—102, JOHN STREET.

Second Edition. Just published, price 8s. 6d.  
NEW GUIDE TO THE IRON TRADE  
FOR MILL MANAGERS AND STOCK-TAKERS' ASSISTANT;  
Containing a Series of New and Comprehensive Tables, practically arranged to  
show at one view the Weight of Iron required to produce Boiler-plates, Sheet-Iron,  
Cast-Iron, Square, and Round Bars, as well as Hoop or Strip Iron of any dimen-  
sion. To which is added a variety of Tables for the convenience of Merchants,  
By JAMES ROSE.  
Batman's Hill Ironworks, Bradley, near Bliston.

### OPINIONS OF THE PRESS.

Tables are plainly laid down, and the information desired can be instantly  
obtained."—Mining Journal.  
Copies have been ordered in Wigan alone, and this is but a tithe of those to  
be expected. The book should commend itself."—Wigan Examiner.  
The work is replete on the subject of underground management."—M. BAKER  
Proprietor.

Send on application at the MINING JOURNAL Office, 26, Fleet-street, London  
THE NEWCASTLE DAILY CHRONICLE  
(ESTABLISHED 1764.)  
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER  
Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North  
Shields; 195 High-street, Sunderland.



H. R. M. will exhibit in full operation at the Royal Agricultural Society of England Show, at Bristol, July 10th to 15th, one of his New Patent Stonebreakers, with screening apparatus, and on wheels to travel; also fitted with his new patent toggle bearing and drawback motions, and reversible planed back cubing jaws in sections.

# H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE CRUSHERS AND STONE BREAKERS,

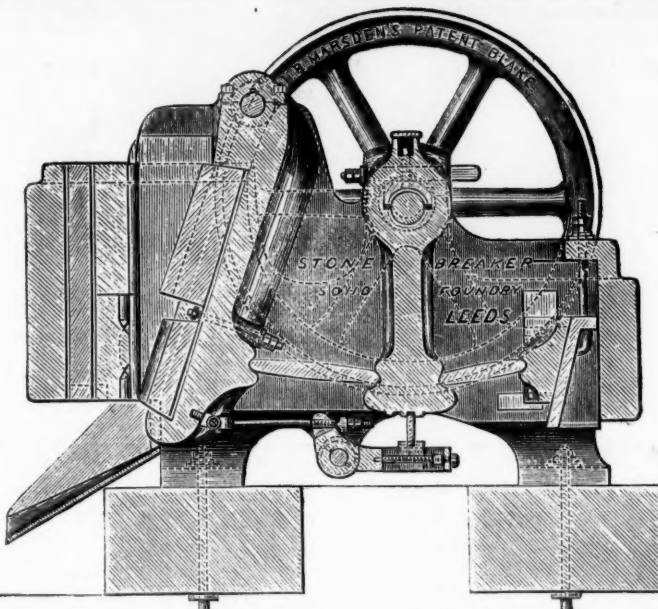
WITH THE  
New Patent Reversible  
CRUSHING OR CUBING  
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR  
MIXTURE OF METAL, WEARING

Four times longer than any  
other.

60 GOLD AND  
SILVER MEDALS.

OVER 2000 NOW IN  
USE.



For Crushing to any degree  
of Fineness, or Breaking  
to a required size.

Her Majesty's Government  
USE THESE MACHINES  
EXCLUSIVELY,  
ALSO ALL THE GREAT  
Mining Companies of the  
World.

H. R. M. has long observed the want of cheaper  
machines,  
STONE AND ORE CRUSHERS,  
And has at length, by means of improved appliances  
for the production thereof, been enabled to reduce  
the prices, yet keep up at the same time the well-  
known strength of construction. Reduced prices  
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-  
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-  
tion. We are, yours faithfully,  
H. R. Marsden, Esq.

6, Queen-street-place, May 10, 1877.

JOHN TAYLOR AND SONS.

DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL for  
the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH  
ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure you  
are the only Machines which fully perform the work you set them out to do, and there are none  
in the Show can at all compare with them. Yours, truly,  
H. R. Marsden, Esq.

WILLIAM PRICE, Contractor, Gold Cliff, Monmouth.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.  
ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.  
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.

## TO COLLIERY AND MINE OWNERS. R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—  
Messrs. THOMPSON, WISE, & Co., Burry Port, South Wales.  
Messrs. DYMOND'S Liversedge Coal Company, near Leeds.  
Messrs. W. ACKROYD and Bros., Morley, near Leeds.  
Messrs. CLAYTON and SPIRIGT, Farnley, near Leeds.  
Messrs. JAS. WORMALD and SONS, Rawdon, near Leeds.  
KINGSWOOD COAL and IRON Co., near Bristol.  
MIDDLETON COLLIERY Co., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, SONS, and Co., Frome, Somersetshire.

Messrs. BARING, GOULD, & ATKINSON, Diamond Fields, South  
Africa.  
Messrs. KIMBERLEY, Diamond Mines, South Africa.  
Mr. HASELDEN'S Lead Mines, Linares, Spain.  
FRYSTON COLLIERY Co. (Limited), Castleford, near Leeds.  
HOWDEN CLOUGH COLLIERY Co. (Limited), near Leeds.  
T. VAUGHAN and Co.'s TRUSTEES, South Medomsley Colliery; and others.

Messrs. R. HOLLIDAY and Sons, Ardsley, near Wakefield.  
HARDWICK COLLIERY Co., Clay Cross, near Chesterfield.  
WEST YORKSHIRE IRON and COAL Co. (Limited), Tingley, near Leeds.  
WM. BAIRD and SON, Coatbridge, near Glasgow.  
BETTSFIELD COLLIERY COMPANY, Bagillt, Wales.  
EDFORD COLLIERY COMPANY, near Bath.

R. HUDSON, Engineer and Ironfounder, Gildersome Street Foundry, near Leeds (Five minutes walk from Gildersome Station, G.N.R.)

## The Barrow Rock Drill COMPANY

Are NOW PREPARED TO SUPPLY their DRILLS, the ONLY  
ONES that have been SUCCESSFULLY WORKED in the  
MINES of CORNWALL. At DOLCOATH MINE, in the  
HARDEST known ROCK, a SINGLE MACHINE has, since  
its introduction in July, 1876, driven MORE THAN THREE  
TIMES the SPEED of HAND LABOUR, and at TWENTY PER  
CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together,  
and at a proportionately increased speed. They are strong,  
light, and simple, easily worked, and adapted for ends and  
stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS,  
and all necessary appliances for working the said Drills.

Apply to—

LOAM AND SON,  
LISKEARD, CORNWALL.

## IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,  
(ORIGINAL PATENTEES),

MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES  
FOR COLLIERIES,

RAILWAY INCLINES, PLOUGHS, HAWSERS, &c.

SOLE MANUFACTURERS of the HOMOGENEOUS WIRE for the  
ATLANTIC CABLES of 1865 and 1866.

WEBSTER AND HORSFALL,  
BIRMINGHAM.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM  
(DAILY), and  
SOUTH WALES GAZETTE  
(WEEKLY), established 1857,  
the largest and most widely circulated papers in Monmouthshire and South Wales  
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the  
second edition at Five P.M. On Friday, the "Telegram" is combined with the  
South Wales Weekly Gazette, and advertisements ordered for not less than six  
consecutive insertions will be inserted at an uniform charge in both papers.  
P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street  
Newport, Monmouthshire.

THE IRON AND COAL TRADES' REVIEW.  
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the  
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron  
and coal districts. It is, therefore, one of the leading organs for advertising every  
description of Iron Manufactures, Machinery, New Inventions, and all matters  
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.  
Offices of the Review: 7, Westminster Chambers, S.W.  
Remittances payable to W. T. Fringle.

## THE "CHAMPION" ROCK BORER

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIANRUBBER HOSE, TESTED  
IRON PIPES, &c.



## Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and  
ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected  
by this machinery, on application.

CONTRACTS TAKEN, OR SPECIAL TERMS FOR HIRE.

ULLATHORNE AND CO., 63, QUEEN VICTORIA STREET, LONDON, E.C.

## THE ROANHEAD ROCK DRILL.

BY ROYAL LETTERS PATENT.

This justly-celebrated Rock Drill, the only one invented that will  
work in the hardest rock without more than the usual repairs re-  
quired by any ordinary machinery, is now offered to the public.

It has been most successfully worked in the well-known Hematite Mines of Lancashire and Cumberland. Will drive 50 to 60 ft.  
in hard rock without change of drill, and can be worked by any miner, and kept in repair by any blacksmith. It is the most  
simple rock drill ever invented, and cannot with fair usage get out of order.  
Plans, Estimates, including Compressors, and all other Mining Machinery, supplied on application to the sole makers,—

SALMON, BARNES, AND CO.,  
MINING ENGINEERS.

Canal Head Foundry and Engineering Works, Ulverston.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES

FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,

RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions  
STOURBRIDGE FIRE BRICKS AND CLAY.